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# An Address
ON
# TUBERCULIN TREATMENT:
## GENERAL SURVEY.

*Delivered before the Fifth Annual Conference of the National Association for the Prevention of Consumption and other Forms of Tuberculosis*

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LADIES AND GENTLEMEN,—The task which lies before me to give a brief summary of what is known about tuberculin is no easy one, and I must ask your indulgence if I have to enter into some rather technical details which may appear dry and uninteresting. I shall try and give you a plain and fair account of the matter, and I want you carefully to distinguish what are proved facts from conclusions, deductions, assumptions, or inferences, which can only be accepted as provisional or as working hypotheses.

### OUTLINE OF KOCH'S ORIGINAL OBSERVATIONS AND EXPERIMENTS.

I am conscious that I am addressing many who are masters of the subject, but there are others probably who have come here to learn, and as there may be some who do not know the principia, the original experiments and observations of Koch which led to the discovery of tuberculin, I think it may be well to state them briefly at the outset.

1. When a healthy guinea-pig is subcutaneously inoculated with a pure culture of tubercle bacilli, during the first 10 or 14 days nothing happens. Then a hard nodule forms at the place of inoculation. The nodule softens, the skin over it gives way, and a discharging sore is formed which ordinarily persists during the remainder of the life of the animal.

2. If an inoculated guinea-pig be re-inoculated after an interval of six weeks, the effects at the seat of inoculation are quite different. In the first inoculation nothing happened for about a fortnight, but in the second the skin at the seat of inoculation soon, within a few days, becomes necrotic and sloughs, leaving a flat ulcerated surface which soon heals up without carrying infection to the lymphatic glands. The tissues of the inoculated animal thus react more quickly and more vigorously to an inoculation than those of the healthy animal. There is a shorter, sharper, and more successful fight. No nodule is produced, but an ulcer is quickly formed, which, unlike the sore in the first case, quickly heals.

This second experiment showed that a first inoculation enabled the animal to overcome the effects of a second inoculation. This was already well known in the case of other diseases, such as syphilis. But Koch also inferred that if the first inoculation produced conditions favourable for fighting the second, the second inoculation must also have a favourable influence on the lesions produced by the first inoculation.

3. He next experimented with dead bacilli instead of living ones. He found that dead cultivations ground down and suspended in water might be subcutaneously injected into healthy guinea-pigs without producing any other effect than local suppuration.

4. In the case of the tuberculous guinea-pig the result of injections of dead bacilli was very different, death following in from 6 to 48 hours. If a smaller dose were given widespread necrosis of the skin at the seat of inoculation resulted. If a very small, much diluted dose were given, neither death nor necrosis followed, and if the dose were repeated at intervals of one or two days a decided improvement in the tuberculous guinea-pig ensued. The ulcer at the site of the primary inoculation gradually healed, which never occurs spontaneously. The swollen lymphatic glands became smaller, the animal gained weight, and the disease was arrested. These two experiments showed that while dead bacilli were non-toxic to healthy animals and only caused local abscesses, they were lethal or highly toxic to the tuberculous in massive doses, but in very small doses were capable of effecting something like a cure in the inoculated animals.

It was, however, a serious drawback to the use of these suspensions of dead bacilli that they were not absorbed but produced larger or smaller abscesses. Koch, therefore, industriously set himself to separate from the bodies of the bacilli their active principle, so that he would be able to use it without producing suppuration. The result of his efforts was the wonderful substance since called tuberculin, whose effects we are here to-day to consider. The nature of tuberculin, its preparation, varieties, and underlying pathological principles will be fully expounded by the learned professors who are to follow,[1] and therefore I need say but little in this place. The old tuberculin introduced by Koch in 1890 was a pure culture of tubercle bacilli on nutrient broth containing 5 per cent. of glycerine evaporated down to one-tenth of its volume and purified by double filtration. The proportion of active principle present in the extract was estimated by Koch at a fraction of 1 per cent.

### THE TUBERCULIN REACTION.

Just as the dead bacilli were non-toxic to the healthy guinea-pig but deadly to the tuberculous, so tuberculin could be given in large doses—2 c.c. or more—to healthy guinea-pigs without apparent effect, but in comparatively small doses killed the tuberculous. With regard to its action on the healthy man the difficulty was to find someone who could be guaranteed free from tubercle. Koch gave himself an injection of 0·25 c.c. and got a well-marked reaction, and he therefore thought that the effect of tuberculin on healthy man was much more potent than on the healthy guinea-pig. The probability, however, is that Koch was not himself altogether free from tubercle. In recognised tuberculous patients it was found that very minute doses—one-thousandth of a cubic centimetre—generally were sufficient to produce a reaction. It was clear, therefore, that in tuberculin one had a substance which possessed the very remarkable property of acting as an intense poison to persons or animals already infected by tubercle, while being non-poisonous to healthy animals or persons. Up to that time there was nothing known exactly like it.

What was observed then, and has been constantly observed since, is that after a subcutaneous injection of a small dose of tuberculin in a tuberculous patient three results may follow, which have been described as local, general, and focal. 1. A painful swelling may appear at the seat of injection on the second or third day. A nodule may be felt by gently picking up the skin with the fingers, or the skin may be red over the swelling. Or there may be an area of redness round the puncture and the nodule may be in the skin itself. 2. A general reaction may be produced, characterised by rise of temperature usually within 24 hours, with headache, general malaise, pains in the limbs, loss of appetite, and sometimes dyspnœa. 3. A focal reaction, an inflammatory reaction at the seat of any tuberculous disease present in the body may be produced. This is apparent to the eye in the case of skin tubercle, such as lupus, where there are visible swelling and redness of the affected part. But in the case of internal tubercle the focal reaction manifests itself by symptoms and physical signs. In the case of pulmonary tubercle there is an increase of cough and expectoration, possibly traces of hæmorrhage, or pain over the affected part. On auscultation there is an increase of râles audible, or râles may be noticed where they have not been present before. Tubercle bacilli may possibly be found in the sputum for the first time after an injection.

Koch's original explanation of the action of tuberculin was to this effect: Tubercle bacilli in their growth in the tissues produce a substance which destroys living protoplasm, and causes it to undergo coagulation necrosis. This checks the further growth of the bacilli, and in some cases they die off. Generally, however, the necrosis does not extend far enough. If tuberculin be injected then it adds its forces to those of the bacilli themselves, and thus the area of necrosis extends sufficiently to cause the bacilli to die off. Successive doses of tuberculin do further damage to the bacilli until

[1] In THE LANCET of August 9th will be found communications on the subject from Professor Sahli, Sir J. K. Fowler, and Dr. W. Charles White made to the Tuberculosis Conference.

finally there are none left, when the tuberculin ceases to act. This explanation, however, was not borne out by facts.

Various other explanations have been put forward from time to time to account for the phenomena which are observed in the natural progress of a tuberculous infection and for the tuberculin reaction. Of these, that which seems most in accordance with the facts is due to Wolff-Eisner. When tubercle bacilli have succeeded in making a successful footing in the tissues of the body their presence calls into being certain antagonistic forces. These forces are of two kinds—one the function of which is to attack and destroy the bacilli, while the other serves to neutralise the poison produced in the destruction of the bacilli. The first kind is a class of substances or bodies or cells called amboceptors or lysins, which have the power of seizing on tubercle bacilli and digesting them and breaking them up into simpler substances, and in so doing give rise to an intensely powerful poison. But this poison is neutralised to a certain extent by the second kind of defensive force, which consists of substances which have been called antibodies. The lysins or amboceptors are capable not only of dealing with tubercle bacilli but also with their derivative, tuberculin.

Tuberculin is non-toxic to healthy animals, but when introduced into the body of a tuberculous animal it is seized on by the lysin or amboceptor, and the secondary substance thereby produced—tuberculin lysin—acts as a powerful poison. It is the lysinised tuberculin which, acting as a poison at the site of injection, produces the local reaction, acting as a poison in the blood produces the general reaction, shown by rise of temperature and constitutional symptoms, and acting as a poison on the tuberculous centres, causing irritation and increased vascularity, produces the focal reaction. The lysinised tuberculin, however, may be entirely neutralised by the antibodies already referred to, and then no reaction of any kind takes place.

Now the question arises how far these effects are beneficial. The local reaction in itself cannot be said to be beneficial, and is only an indication of the body response. The general reaction may be beneficial by calling into being further lysin bodies and also further antibodies neutralising the lysinised tuberculin. The focal reaction may be beneficial by bringing an increased blood supply to the tuberculous foci, and with the increased blood supply lysin and antibodies to attack and counteract. In cases where the body is unable to respond to the demand made on it and neutralise the transformed tuberculin, the latter exerts its poisonous influence unrestrained, and is then capable of doing harm to the tissues, causing extension of disease or of actually killing the patient or animal.

### TUBERCULIN AS A DIAGNOSTIC AGENT.

Whatever other properties tuberculin might possess there was one about which there could be no possible shadow of doubt, and that was its power of revealing the presence of tubercle in the animal or human body. Tuberculin has been of the greatest value in the diagnosis of tubercle in cattle, but it is of much more limited usefulness as a diagnostic agent in man.

In order to eliminate the general and focal reactions other methods of testing with tuberculin have been introduced of later years—the cutaneous test of von Pirquet, the percutaneous test of Moro, and the conjunctival test of Calmette. The von Pirquet test is practically useless for positive diagnosis, except in the case of children, and the Calmette test is now but little used on account of the undesirable effect on the conjunctiva. In both children and adults a negative von Pirquet test with absence of other signs of tubercle makes it very unlikely that tubercle is present in the body. The ophthalmic test follows the same lines as the cutaneous test, but it must be remembered that it is only the first time it is applied that it is trustworthy. In healthy persons the repetition of the test may produce a reaction.

The main objection to the use of tuberculin as a help to diagnosis in man is that tuberculous infection is so common, and the test does not help to distinguish between active and arrested or healed disease. Some eminent authorities, such as Professor Sahli, have declared themselves as absolutely opposed to its use. I consider myself that it is only rarely that there is any necessity to use tuberculin for diagnosis, but I have used it in exceptional circumstances in which it has been occasionally of value in clearing up the diagnosis. I strongly deprecate the indiscriminate use of tuberculin as an ordinary means of diagnosis. Cases of tuberculosis which cannot be diagnosed without the use of tuberculin are likely to do well under ordinary hygienic treatment. The examination of the blood for the tuberculo-opsonic index before and after exercise is perfectly safe, and gives results certainly as trustworthy as tuberculin.

A negative result with tuberculin, even when three consecutive tests are made, is not absolutely trustworthy, as I have found by the subsequent discovery of tubercle bacilli in the sputum in such a case. It is stated that in animal experiments a positive result is obtained in from 1 to 3 per cent. of cases which prove to be non-tuberculous.

### TUBERCULIN AS A THERAPEUTIC AGENT.

In Koch's original announcement he said he felt justified in saying that tuberculin would form an indispensable aid to diagnosis, but he went on to say that of greater importance than its diagnostic use was its therapeutic. It is difficult to understand how Koch so quickly persuaded himself that tuberculin was a specific remedy for tuberculosis. I have recorded all he mentions about his animal experiments in his original papers. I cannot find anything about the curative effects of tuberculin on animals, although the injections of dead bacilli appeared to benefit. He passed over the action of tuberculin on animals, and afterwards dwelt on its extraordinary effect on tuberculous human subjects. My colleague, Dr. Batty Shaw, has recently asked whether anyone has subsequently shown that tuberculous guinea-pigs can be cured by injections of any kind of tuberculin. I should like to ask also whether anyone has been able to obtain the cure of the tuberculous ulcer arising from the primary inoculation by means of tuberculin injections. I fear the answer must be in the negative.

It is a matter of history how tuberculin immediately following Koch's announcement was widely used in the treatment of tuberculosis, and without a full appreciation of the attendant dangers. The results were disastrous, and tuberculin as a mode of treatment was almost entirely dropped. Writing in 1897, a distinguished authority on tuberculosis said of tuberculin: "It was introduced as a curative agent, but its use is now limited to the diagnosis of tuberculosis in cattle. Its continued injection in a case of tuberculosis leads to dissemination of the disease, so that whereas at first the disease may be limited to the lungs, after a course of tuberculin the patient may die with disseminated lesions in various organs of the body. The same observation has been made in cattle. There is no means by which immunity can be conferred on any animal or on man."

The whirligig of time, however, has brought tuberculin into repute once more as a therapeutic agent. A variety of circumstances has contributed to bring that about. When the *débâcle* of tuberculin came a few remained faithful to its use and believed in its efficacy. Some of these became enthusiasts, and by their enthusiasm induced others to use it. At the same time Wright in this country extended the principle underlying the use of tuberculin to the treatment of other diseases, and inaugurated a system of vaccine treatment for a variety of bacterial diseases, defining vaccine as denoting a sterilised and standardised suspension of micro-organisms. In Wright's method much smaller doses of tuberculin were used than had been originally employed by Koch and his followers. Wright regulated his doses and the time of administration by the opsonic index, and claimed satisfactory results. Physicians on the continent and in America, however, treated cases on quite different lines, starting with small doses and gradually increasing them and avoiding reactions, and they also claimed to get good results. Wright's method of small doses repeated at longer intervals appeared appropriate for local forms of tuberculosis, such as the glands, while the other method of gradually increasing doses at short intervals seemed more suitable for pulmonary tuberculosis. There is no doubt that at the present day tuberculin, rightly or wrongly, is being widely used in this country as a therapeutic agent. It is therefore fitting that we should devote time and thought to the consideration of its use.

We have a considerable number of forms of tuberculin to choose from, most of which we owe to the genius of Koch. The tuberculins may be divided into two main classes—those which are prepared from the culture media and those prepared by grinding up the bacilli. The old tuberculins, T., T.O., P.T., P.T.O., bouillon *filtré* belong to

the first class, containing the extractives of the bacilli; the newer, T.R., B.E., Béraneck's tuberculin, to the second class, containing the endoplasm of the bacilli, with or without extractives.

In his original communication Koch pointed out that the old tuberculin was inert when administered by the mouth. Endoplasm tuberculin, like T.R., however, is still active when given by the mouth. I have satisfied myself that old tuberculin is inert by the mouth. I have given as much as 4 c.c. of old tuberculin by the mouth to a tuberculous subject without the slightest effect. In the case of T.R., however, one is able to produce the same constitutional effects through oral administration as through subcutaneous, but the dose must be considerably greater. As B.E. contains extractive as well as endoplasm it loses part of its effect when given by the mouth. It is therefore not so useful for oral administration as T.R. With regard to dosage, generally speaking a dose of 1-1000th of a cubic centimetre is on the borders of reaction, and in starting treatment it is never wise to administer more than from 1-1000th to 1-100th part of the reaction dose.

### THE NATURAL COURSE OF TUBERCULOUS DISEASE.

Before considering the effects of tuberculin treatment we should keep in mind certain important facts concerning the natural course of tuberculous disease as it is met with in human subjects. A very large proportion of the human race become infected at some period of life with tuberculosis. Of those infected a large proportion recover spontaneously and without medical treatment. It is needful to bear this in mind, lest we forget that the cure of the early case is not necessarily the result of the treatment which has been adopted. When tuberculosis attacks a race among which the disease has been previously unknown it makes great ravages and has a high mortality. This is also observed in the case of specific fevers and other infectious diseases. The race which has long known the presence of tuberculosis in its midst has acquired a certain degree of resistance. It is due to this resistance that so many recover from infection with but little damage done, and that in others the disease takes on a very long and chronic course. Natural resistance may, however, be broken down by prolonged fatigue, exhaustion, intemperance, poor living, anæmia, the debilitating effects of fevers, such as measles, and various other causes. The resistance of tissues may be weakened by the effects of an injury, and the tubercle bacilli may then make a successful attack on the damaged part. The bacilli once having gained a footing in the body, the general resistance may be lowered.

The aim of the physician is to assist Nature in bringing about a cure, and he endeavours to remove those causes which have lowered the natural resistance. The effects of good food, pure air, rest, and exercise judiciously graduated, and general healthy environment in improving the patient's condition are now universally recognised; but it is not a hundred years ago since a low diet, closed windows, and lowering treatment, bleeding, blisters, and mercurials were considered right and proper. The surgical removal of local tuberculous tissue, as in glands or kidney, is often advisable to prevent extension to other parts and the lowering of general resistance.

But although the modern ideas of general treatment of tuberculous affections are an enormous advance on the old methods, and many lives are saved and many patients restored to health and usefulness, we feel too often powerless to stay the march of the disease, nor can we be satisfied with methods of cure which cost so much time and money to effect. What we want is something specific; but can we be said to have it in tuberculin? As the years go on new cures and new remedies crop up and are tried and are found wanting. Some of the daily newspapers appear to have an extraordinary weakness for new cures for consumption, raising hopes which time after time have been doomed to disappointment. The only new cure with any good claim to be a specific which has been brought forward during the last quarter of a century is that which we are here considering—tuberculin.

### THE METHODS OF ADMINISTRATION.

There are three methods in which tuberculin is used in the treatment of pulmonary tuberculosis. In the first tuberculin is given without any attempt being made to prevent reaction. This was the method adopted on the first introduction of tuberculin treatment by Koch. Tuberculin was administered in a more or less haphazard way. It was a case of kill or cure. In three weeks, according to Koch, the dose might be increased to 500 times the original amount. In the second plan reactions are not disregarded, but tuberculin is administered in increasing doses until a reaction occurs, and then more cautiously administered until another reaction occurs, and so on. In the third plan an effort is made to avoid reactions altogether.

The method of administering tuberculin so as to produce reactions has serious drawbacks. The focal reaction is not under control and may go far beyond the limits of hyperæmia and set up renewed activity in the centres. It was, in fact, the bad effects which followed tuberculin reaction in certain cases which brought the treatment formerly into discredit and desuetude. The plan of starting with very small doses and gradually increasing these and avoiding reactions is that which is most followed at the present time. One starts with a dose which is a thousandth part of that which might be expected to give a reaction, and the dose is gradually and tentatively increased. A good rule to observe is never to double the previous dose, and a careful watch should be kept for any signs of sensitiveness or reaction. A local reaction should be taken as a danger signal and the dose diminished. A general reaction is an indication for suspending treatment for a time and then working up again from a smaller dose. In this way it is possible to work up to quite large doses of tuberculin without these large doses producing any apparent response in the patient. In this way we have certainly brought about tolerance to tuberculin, and we have to inquire whether that is an advantage to the patient, and whether we have effected beneficial changes in the tuberculous lesions themselves and in the general condition of the patient.

The tolerance to tuberculin is not of very long duration, but soon falls, and after a few months has disappeared. Petruschky has accordingly advocated the method of repeated courses, "Etappen," extending over a period of two years, alternately three months' treatment and three months' interval without. Others have recommended testing with tuberculin after a few months' interval, and if the patient reacts then, starting the treatment again.

### THE RESULTS OF TUBERCULIN TREATMENT.

No one can reasonably maintain that we have in tuberculin a direct cure for tuberculosis. Tuberculin is the most powerful poison known for persons or animals infected with tuberculosis. Tuberculin is itself the lethal principle of the tubercle bacillus, but it is only lethal when the body has been infected and when the body forces have been already in conflict with tubercle bacilli. When natural cure or arrest takes place, immunity to the toxin does not necessarily follow and only a relative immunity to the bacilli ensues. Therefore, if we attempt to follow Nature, what we ought to try and bring about is an immunity to further infection with the bacilli. The most that can be claimed for tuberculin is that it calls into being or stimulates to activity the antagonistic forces inherent in the body for combating tuberculous infections.

When we speculate as to what influence treatment by the reactionless method has had on the tuberculous lesions, then we cease to be on sure ground. When tuberculin produces a focal reaction, which it generally does when it produces a general reaction, we have good reason for believing that certain changes take place in the neighbourhood of the tuberculous lesion. We have no certainty as to what happens when tuberculin is given in such doses that no general reaction is ever produced. All that we are justified in claiming as the result of the reactionless method is that we produce a state of tolerance towards tuberculin. But this condition of tolerance does not keep up long at the level reached after the tuberculin is stopped.

Provided a particular mode of treatment of tuberculosis is not absolutely harmful, one could by careful selection of cases show wonderfully good results. Even where no selection of cases is made it is common experience that the general tendency of cases which come under medical treatment of any kind is towards improvement. But everyone who uses tuberculin uses it in selected cases. The physician who uses tuberculin in ambulant cases at a dispensary uses it in selected cases. The very fact that the patient is well enough to come to the dispensary for treatment is a favourable point to begin with, and a selection in favour of the success of the treatment. If he is febrile he is put down

as mixed infection and unsuitable for tuberculin. The physician who uses tuberculin at a hospital again will use judgment in the selection of cases. If he employs tuberculin his best cases will be chosen for the treatment. The same is true at a sanatorium, where the best, not the worst, cases will have tuberculin treatment. The physician practising at a health resort will select his cases for tuberculin, and cases which go to a health resort are already more or less selected cases.

Now we must point out here that in judging of results we must bear in mind that a favourable type of the disease must in most cases have been selected for treatment if it is possible to carry on a course of tuberculin injections for three months without real or apparent reactions. The febrile and active cases, if I may judge by my own experience, are not as a rule good subjects for tuberculin. Most of the cases that do well appear to be cases that one would select as likely to do well under favourable conditions of hygiene and care. That has all to be borne in mind in judging of results.

We have no absolute convincing proof that tuberculin treatment by itself will arrest or cure or improve a larger number of cases than would have arrived at the same results without the treatment. Until we have that we must preserve an open mind on the matter. The fact is that tuberculin as a remedy, if it is a remedy, must be put on a far lower plane than many remedies which we possess for the treatment of disease. Take, for example, salicylate of soda and acute rheumatism, mercury, iodide of potassium and salvarsan in syphilis, quinine in malaria, antitoxin in diphtheria, thyroid extract in myxœdema. There we have remedies about whose value in these diseases there can be no shadow of doubt.

A true specific to tuberculosis should have the power of allaying the fever of the disease and of arresting the progress of all activity due to the bacillus. The most that can be claimed for tuberculin is that it promotes the natural defences of the body. That is something, but the same can be claimed for fresh air, for good food, for hygiene, for care, for climate, and for all the other weapons which we possess.

Much remains to be done to prove that tuberculin possesses any very high value as a remedy. Let it be shown that tuberculous disease in animals can be more readily cured or arrested by means of tuberculin treatment than without. Take the guinea-pig alone. Let 200 healthy guinea-pigs be chosen and inoculated with the same dose per weight of pure cultures of tubercle bacilli, and then let half of these, chosen by lot, be treated with tuberculin according to any recognised method, and let the other hundred be kept as controls in every other way under the same conditions. If those treated with tuberculin do better it will be something in favour of tuberculin. Take a similar number of tuberculous cattle and select by lot a hundred for tuberculin treatment and see whether, keeping all under similar conditions, the tuberculin-treated animals do better than the others. Dr. Batty Shaw has attempted on a small scale a similar trial in the case of hospital patients. But to prove anything such a trial has to be done on a large scale, and in the case of human beings it is very difficult to carry out. Patients come to us for treatment, and we are bound to recommend for them what treatment we consider best for them. We cannot say to one, chosen by lot, "I am going to give you tuberculin because I want to see if it does you good," and to another, also chosen by lot, "You shall be treated without tuberculin because I think you will be better without it."

It is for those who have strong faith in tuberculin as a cure for tuberculosis to make out their case. I speak not as one without experience. For a number of years I have used tuberculin in a large number of cases. I have used extract and endoplasm. I have given it orally and subcutaneously. I have given it at longer and shorter intervals. I have given it in repeated small doses. I have given it in gradually increasing doses. I have used it because I felt it ought to have a full trial. Among those who have expressed their belief in its usefulness are men of high standing in the profession, both in this country and abroad. With similar testimony as to the effects of any other remedy I should feel it my duty to use it. But after all the trials I have made I still feel uncertain as to the value of tuberculin. I do not feel that confidence in the power of tuberculin which would justify me in saying to every patient that comes to me with tuberculosis without secondary infection that I have a remedy in tuberculin which will surely benefit him.

A recent writer on tuberculin treatment says that phthisis treated with tuberculin before it has become open remains closed. But how can he prove it? What knowledge has he how many cases of phthisis untreated with tuberculin before it has become open remain closed? He adds it is true that the same result has been claimed for hygienic treatment. He does not attach very much importance to statistics, and he concludes that of the value of the treatment the tubercular patient is the final judge. Experience of tuberculin under the new conditions is making the tuberculous patient willing and sometimes even anxious to submit himself to treatment with the remedy. I beg to submit that it is the physician of wide experience who should be the final judge.

Tuberculin treatment is still on its trial. When all is said and done we have to acknowledge that the results of it so far are not brilliant, certainly not convincing. Vaccine treatment, as a whole, is on its trial, and if we except staphylococcus infections no more can be said for vaccines than for tuberculin. I hear of many failures but few cures effected in private practice. I have never seen a person who has been cured by vaccines of anything of which he could not get well without. I want to see what I have not seen yet, convincing cures effected in our hospitals. There has been much theorising and talk. What is needed is practical proof—results which can be attributed honestly and fairly to the special form of treatment employed, and which show its efficacy by showing themselves undoubtedly superior to anything previously obtained or observed.

## THE USE OF RADIUM IN MALIGNANT DISEASE.[1]

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IT is safe to say that surgery is entering upon a new era of hope and attainment in the treatment of malignant disease. Whatever the primary cause of cancer, in its broadest sense, is for the hour a question of less importance than the more practical one—as to what deterrent effect can be produced on disordered cells by new physical agents. It is a trite saying that there has been no known cure for cancer. Surgery has expended its utmost force in cutting out every vestige of disease, or to destroying by cautery, caustics, or freezing. These occasionally cure the patient; they never cure the disease, they only remove it. We must look to forces like organic chemistry, or biochemistry, or agents like Roentgen rays or radium—which latter we will now discuss.

We can safely form an opinion of the action of radiant matter upon animal cells by its action on those of vegetable life, for who can differentiate the vital force actuating each? In the laboratory of nature we study the effect of radium on seeds and bulbs. This is a foundation stone of its effect on animal cells. After suitable exposure of seeds to varying amounts of soft and hard rays, issuing in incessant streams from this wonder-working mineral, we watch them grow and see three results: (1) A death-dealing force has played upon the near-by seeds so that their life is destroyed; (2) upon seeds a little further removed a stimulating effect has occurred, wonderful to relate, so that their growth is greater than that of seeds which have had no radium; and (3) at distances beyond that of stimulation, where the hard gamma rays have played relentlessly on the seed life, they show a retarded vitality, and are depressed in their growth more and more up to a point several inches away from the radium. The range of action of alpha rays, we are told, is within a half inch, that of beta rays somewhere about an inch and a half, but the gamma rays are ultra-penetrating.

Judged from complete demonstration which can be illustrated on a photograph, we have a proof that we can produce three different effects upon cells by the correct use of radium: (1) destruction of life; (2) stimulation; and (3) depression and retrograde change. I shall endeavour to show that the surgeon can utilise the third so that he can at will

[1] A paper read in the Section of Radiology at the Seventeenth International Congress of Medicine.

produce that retrograde change in cells which have shown erratic overgrowth and formed life-destroying tumours. Partial success, or discouraging failures of the past, may be largely due to ignorance of the baneful influence of the alpha and beta rays which one can now eliminate. In this I think we put our finger on the weak spot in radium treatment. If the beta rays stimulate we certainly do not want them; it is fair to say that gamma radiation is our aim. The study of the effective use of radium in briefest report—stripped of complicated observations and intricate notes necessarily accumulated about the cases narrated—will occupy our attention during the brief time at our disposal.

I may premise by saying that, while most of the early observers of its value were eminent men of large dermatological experience, few surgeons were fortunate enough to secure radium early. It was my good fortune to acquire 150 mgm. of Madame Curie's strongest radium barium chloride (× 300.000) in 1903 and to add to this later 250 mgm. of pure radium bromide (× 2,000,000) of French and German make, which gave opportunity to study its effect on cases of surgical interest—cases chosen largely from those refusing the use of the knife or beyond its aid. During ten years I have been able to study the efficiency of these specimens on more than 750 individual cases in private, including 250 epitheliomas of all parts; 180 carcinomas of the tongue, throat, œsophagus, rectum, uterus, breast, &c.; 50 sarcomas of the skin, parotid, bones, &c., besides goitres, tumours of the liver and mediastinum, and a variety of nævi, moles, papillomas, &c. Of the numerous failures I can truly say that they seem due to inadequate amount, or insufficient time of application, or error in using the proper rays. In other words, it has been evident that all three types of results seen in seed experiments are to be recognised in radium work, to wit—(1) destruction of tissues too closely in contact; (2) stimulation and harmful results; and (3) efficient retrograde degeneration of malignant growths with lasting benefits amounting at times to a surgical cure.

As a preliminary observation and keynote to the understanding of retrograde cell change I would cite the effect of radium on common warts. Obstinate and seemingly unapproachable warts on every part of the body—tongue, palate, buccal lining, eyelids, soles of the feet, underneath finger-nails and elsewhere—have infallibly disappeared after one radium application, and have left a normal bed. Clear proof of this extraordinary retrograde action is brilliantly shown in vocal cord papillomata. No matter how extensive the growth is which fills the larynx, or how many years it has existed, or what former treatment has been given, it disappears before the gamma radiation. Of 8 such cases one had existed 47 years, during which time the growth had been extirpated by able operators not less than twice each year to enable the patient to breathe. One application of radium cleared much of it away after simple contact, so that no operation was needed for three years, as the old lady breathed easier than ever before.

The first case I treated in 1907 had been operated on by specialists many times, and by me once, many years before radium was discovered, by the radical method of splitting the larynx, excising the masses of papilloma from both cords with scissors, and applying cautery to the surfaces. Notwithstanding this, recurrences continued to take place and were excised as before. At this stage in 1907 I tested radium for the first time, with immediate shrinkage of the tumour, though I used much less than I now advocate. Once afterwards a very small recurrence showed at one cord and was snipped off, but the patient's voice has been re-established and her physician agrees with me that it is a practical cure enduring for more than six years.

The most brilliant recent demonstration, however, is the climax of this type. A young woman of 17 years found her fine singing voice failing and soon lost her speaking voice also. A specialist then found and removed a small tumour from the left vocal cord. The growth recurred rapidly and in seven weeks a much larger mass was removed. Again a rapid recurrence took the form of extensive papilloma spreading over both vocal cords. She could now speak only in a whisper, and was finding some difficulty in breathing. Her physician, in despair, brought her to me to consult about the trial of radium. I gave a hopeful outlook and applied 100 mgm. of strongest radium in a small glass capsule placed within a thin celluloid tube. This I held between the vocal cords 30 minutes. In two months the growth had entirely gone and her speaking voice was restored. In four months her full singing voice was demonstrated to a large audience. More than two years have gone by and her vocal cords remain as white and her voice as normal as ever.

I can say, therefore, from this and other brilliant results that one treatment with 100 mgm. of strongest radium held between the vocal cords for 30 minutes will cause large masses of papilloma to disappear in eight weeks. This potent and subtle force, then, by its gamma radiation is capable of causing complete retrograde disappearance of massive cell growth.

Let us take one step nearer to malignant disease. There are those who underestimate the meaning of the power of radium to cure epithelioma of the skin. The recognition of its power has been admitted since Denyez and Danlos first applied the specimen entrusted to them for trial, by the magnanimous Madame Curie, to cases of ulcerating growths of the face, which up to that time had been known to have a low grade of malignancy. Every operator since that time has averred its infallible action. It is no small tribute to this unique agent that so destructive a low-grade cancer, whether on the eyelid, nose, or cheek, can be permanently cured by radium, better perhaps than by any other known agent and with the least scar. Considering that this epithelial tumour usually starts as a hypertrophic keratosis we are witnesses to an exaggerated cell growth, retreating under its radium-enfeebled activity until it has fallen back to a normal course of life. This is precisely the result we saw in the seeds. Nevertheless, one has dealt with a potentially malignant growth and cured it by gamma radiation. It would have gone on to destroy the patient's life. In that it was malignant! (I here show a serious case of destructive cancer of this type cured by radium more than eight years ago, with no recurrence up to date and the patient in excellent health.) What surgeon of experience has not seen many cases of epithelioma of the eyelid advance to the orbit, extend to the brain, and end the unhappy patient's life in spite always of extensive resection of the eye and elaborate plastic surgery. Such cases could have been cured in every instance if treated early by radium. It was "cancer in the making" when it began, and it was an unchanged basal cell epithelioma still when it killed the patient.

Such power to control disease is not confined to skin cancer only. In illustration I show here a case of primary cancer at the root of the neck, developed to the size of half a hen's egg, which had grown so tightly to the carotid artery at its origin that its complete dissection was not possible. A flat shell of the disease was necessarily left attached to the carotid wall. Immediate post-operative use of strong radium for eight hours has resulted in immunity from disease for four years. The patient remains in perfect health, as her recent photograph shows, though the invisible and inert remnant can still be palpated. Microscopic examination showed malignant cancer.

This one of many cases only illustrates the correct principle advocated many years ago by Wickham. Malignant tumours must first be excised as thoroughly as possible and the bed of disease be well radiumised to effect degeneration of malignant cells. This method has my unqualified endorsement. Many patients, old and feeble, cannot tolerate elaborate and usually ineffectual operations, who will easily bear extensive curetting and free use of radium. These will certainly have many years added to their lives.

Ulcerating types of cancer are rather the better ones for the use of radium, but where the mass of disease is too great it is not possible to penetrate effectually deeply enough to produce the desired result, and it becomes the duty of the surgeon to reduce the diseased tissue to a minimum—a thin shell, as it were—before applying radium.

There are many types of mammary cancer, true scirrhus carcinoma, which are near the surface and involve the skin, which can be radiumised without operation, while others must be incised and tubes of radium buried in the tumour. This will diminish the mass and partially arrest the growth. Thus in some cases I have kept the patient from death from two to seven years, half of which was a gain in the actual span of life. It is in this field we especially need to utilise and improve methods of using radium. I have every reason to believe that technical improvements will add yearly to the gain already shown. Nevertheless, it is with a true sense

of justice to the victim of malignant disease that one must still advocate early and complete surgical removal where possible. One or two illustrations in coloured casts are here shown to demonstrate the achievements of radium in this field, though they by no means represent the many minor cases of recurrence after operation in the region of the scar, which radium is now able to dissipate.

In many cases of malignant growth at the nipple we recognise a type of epithelioma, beginning in the lining of the ducts, which when taken early can be completely cured by radium, and thus save the mutilating amputation of the entire gland, so strenuously advocated by extremists in surgery and of which heretofore I, too, have been so often guilty.

Let us consider now the types of cancer so dreaded by all, the worst types of breast and uterine cancer in women, and cancer of the tongue, œsophagus, stomach, and rectum in both sexes. Has radium made any record in controlling these? I hesitate to speak of actual progress in cancer of the tongue, œsophagus, and stomach. Yet in most cases of advanced disease of the tongue and œsophagus a prompt and marked amelioration, with reduction in size of the mass, is usually seen after judicious use of larger doses of radium. Yet the disease gains headway at last, and all that has been gained by temporary reduction is soon lost. One exception I may claim in a case of excision of epithelioma at the frenum of the tongue with radium application, which remains well at five years. Two cases of ulcerated induration, with leucoplakia types of smokers' cancer, remain cured for several years. In this field also much gain will undoubtedly be made from year to year.

In œsophagus obstruction by malignant growth one sees a widening of the channel and temporary relief, but no permanent gain justifying the term "cure."

In obstructive rectal cancer a greater and unquestionably favourable effect is seen. It requires large quantities of radium filtered through 2 millimetres of lead applied for 8 to 12 hours daily for several days to obtain the favourable results now so often seen. The patient is soon relieved of the distressing symptoms, and a marked reduction of the mass follows. He uniformly gains in colour and is continued in comparative health for several years, whereas death otherwise would occur in months. There are as yet no recorded cures.

It is in the field of uterine cancer, however, that we have more hope. Certain it is that the immediate effect of extreme radiumisation on cancer developed in the uterine cervix, or in the scar after operation, alters the disease so as to replace it by sound cicatrix. My earliest case occurred in 1905 in a woman with bleeding cancer of the cervix, which after curettage was well radiumised by 60 mgm. pure radium bromide. Pathological examination showed typical cancer invading the cervical tissue. She remains in perfect health without further treatment after eight years. The pathologist reviewed the microscope findings several times of late and avers there is no error in diagnosis.

Again, in 1905 I curetted a very extensive fungating cancer of the cervix in a married woman and applied 25 mgm. radium bromide for 24 hours with prompt healing and perfect health for three years, when I lost sight of the patient after her physician's death. In other cases of very advanced type, in which there were masses of fungus carcinoma, curettage and radium have maintained health for the past three or four years. In one patient during this year (a second recurrence of the deep scar after uterine extirpation for cancer by a well-known surgeon) I was asked to try radium, and was surprised to have a complete disappearance of all disease from the pelvis, which has shown a soft scar for the past few months. The patient seems restored to health.

This important field has been the subject of enthusiastic research with extraordinary results by Bumm and Voigts, of Berlin, Krönig and Gauss, of Freiburg, and Werner, of Heidelberg, whose findings give renewed hope of conquest. Such startling results will come as a surprise to those only who have not seen the remarkable retrograde effected on neoplasms by radium.

Even in the field of uterine fibroids—in the two cases in which I have tested radium—there has been shown progressive reduction, absence of hæmorrhage, and final cure. The drawings here exhibited amount to a demonstration. Although every surgeon knows that such retrograde change is not rare at the time of menopause or after removal of the ovaries, it is more than a coincidence in these cases, and is suggestive of the artificial arrest of ovarian influence by radiumisation. This, again, leads up to the thought of subsidence of gland hyperplasia, as in hypertrophic thyroids and parotids (illustrated) under the same influence, and suggests a new field of organotherapy.

Under the discussion of malignant disease we may rightly include destructive types of sarcoma, which illustrate in a remarkable way the specific action of radium as a curative agent. One example of round-celled sarcoma of the eyelid, here shown by successive coloured casts, shows a large tumour of the lower eyelid, which had resisted Roentgen rays, which rapidly disappeared after four hours of radium so as to leave a normal lid. This has remained cured during nine years, and the condition defies anyone to tell on which eye the tumour had been. Here was a remarkable reassembling of cells normal to the lid out of the mass of tumour.

But even this type falls into the shade when we see the cure of giant-cell sarcoma of bone by radium. The first case of extensive destructive myeloid tumour of the jaw, which I treated in 1904, remains cured to-day after nine years, with a solid lower jaw replacing the pultaceous soft tumour and with all teeth healthy, and solidly embedded in bone. Similar and invariable control of this type of disease has occurred to me in nine cases. The last two are yet under treatment, but are of such interest that they may be quoted.

A young man had the upper three inches of the right humerus entirely replaced by a myeloid tumour expanding in lemon shape. Under cocaine anæsthesia a portion removed showed mixed giant-cell and spindle-cell sarcoma. I embedded in the mass four tubes of radium (total 150 mgm.) for three days, so as to irradiate and cross fire it. During the eight weeks following gritty bone began to form in the soft tumours, and then a bony shell formed. During six months a marked increase in bone and simultaneous shrinkage has occurred. Notwithstanding some central necrosis of the soft tissue it bids fair to recover its bone solidity and strength.

The last and rarer pure myeloid sarcoma offers opportunity to demonstrate the superiority of radium to all other surgical measures. A gentleman past middle life developed a myeloma in the right parietal bone. The bone dissolved as the growth progressed until a defect in the skull was seen as large as the palm of the hand, extending partly across the opposite parietal. His surgeon attempted operation, but retreated from the bloody trial after removing enough for examination. Two months ago the patient was brought to me, and I applied radium by distance filtration, which seemed eminently fitted to this case—hoping to avoid embedding it, except as a last resource. In no case has radium failed to effect retrograde change and arrest this type of tumour.

Finally, I desire to record one of the most recent and startling disappearances of malignant growth I have ever seen. A gentleman 60 years old was brought to me in May last with numerous tumours in closely related groups on his bald scalp. These developed steadily near an old scar after the surgical removal of a small one of the same appearance eight months previously, and had been rapidly increasing in size and number during four months. They varied in size and were grouped in chains and uneven purplish hummocks, more than a dozen in all. In clinical appearance they resembled nothing but sarcoma. Two physicians of experience who referred him to me regarded them as malignant and the patient as doomed. I referred the case to Professor Fordyce, a distinguished syphilographer and dermatologist, for opinion. He said it was unquestionably of hopeless malignancy, probably sarcoma. That was my view, and no excision seemed needed to demonstrate it. I show here casts taken before and after treatment. Radium by distance filtration offered peculiar advantage in this condition because of the even dissemination and cross-firing of the rays, when applied in the following manner. 150 mgm. of pure radium bromide were placed in a pasteboard box covered by one and a half inches of loose cotton, thereby to maintain it at an even distance from the scalp. The box was placed over the main group of tumours and held there for an hour and a half. Then it was moved over the other groups in succession, each receiving lateral radiation all the time, while the gamma rays played vertically over

the nearest tumours. The total exposure was seven hours, over six places. He returned to his home 500 miles away, and was to write in two weeks. On the twelfth day he appeared in person with the astonishing statement that the tumours had all gone. Examination by myself and Professor Fordyce showed a normal scalp, movable and flexible as in health, and nowhere a trace of former disease. Two months later his physician carefully examined him and reported that no trace of trouble could be found. This threatening growth has entirely been dissipated.

In conclusion, there has been established: 1. An undoubted retrograde degeneration of malignant cells under correct dosage of gamma radiation. 2. Effective use of radium lies in the application of a large enough quantity to avoid the stimulating action of little doses at short range. 3. The utilisation of gamma radiation with its deep penetration can be made by the removal of alpha and short beta rays by filtration through lead. 4. Such filtration requires many times as long for a sufficient amount of gamma rays to act, as when other rays are eliminated by what may be called "distance filtration." One and a half inches or four centimetres seems in practice to exclude most of these and gives free and instant play of the entire gamma range without delay of passage through lead. 5. Cross firing of several specimens simultaneously or of one large specimen moved successively to several near by places is necessary for the best work. 6. Normal tissue resists many times as large doses of gamma rays as are required to check and dissipate morbid growths, as shown in the larynx.

New York.

## THE PREVENTIVE AND CURATIVE TREATMENT OF INDUSTRIAL LEAD POISONING.

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IN "Dangerous Trades," a book published 11 years ago, a chapter written by Dr. H. Lewis Jones of St. Bartholomew's Hospital is devoted to the treatment of lead poisoning by means of the single electric bath. As to the efficacy of the treatment there is no doubt. Although in cases of lead paralysis recovery is slow, yet restoration is quicker when, in addition to medicinal treatment and massage, electricity is carefully employed. As Dr. Lewis Jones remarks in the article referred to, elimination of the metal is necessary in order that a patient may recover from the effects of the poison. In an ordinary way elimination of lead probably takes place by the sweat glands of the skin, by the kidneys, and by the mucous membrane and glands of the bowel. On the other hand, the direct effect of electrolytic elimination is to cause the lead to pass, by a process akin to osmosis, in some soluble form, probably as chloride, from the tissues of the body to the electrolytes surrounding the body—that is, to the electrodes in the bath in which the patient is wholly or partially immersed. The experimental evidence that lead can be extracted from the tissues of the body is not free from possible sources of error, for the amount of lead in the body at any time must be small, probably not more than a few grains, so that there would be in a dipolar bath—that is, a bath into which both poles are placed—considerable difficulty in depositing measurable quantities of lead on the poles in the bath. Where only the single bath, full length or local, is used, the lead deposited on the positive pole appears as peroxide, whereas on the negative pole it is in a spongy metallic form. Any lead found in the bath water in which a workman has been immersed may be a metallic salt which was simply lying on the skin, or it may be lead removed from the tissues and which was in process of elimination normally by the sweat glands; but admitting these as sources of the metal there is the fact that electrolysis favours the elimination of the poison.

The point to which I wish to draw attention is the employment of the electric bath in rather a different manner to that recommended by Dr. Lewis Jones, also its application to a wider field than the purely curative. My suggestion is that we should not wait until lead workers become ill, but that we should treat them when they are commencing to go wrong. It is with lead as with opium, arsenic, and infectious diseases generally, one of two attitudes is assumed by the body in regard to it. As a consequence of exposure to lead there may be created immunity—that is, tolerance on the part of an individual to it; or there may be developed anaphylaxia—that is, an increased susceptibility to the influence of the metal. These conditions are not constant—the one may pass into the other, so that a person who has been immune for years and who has appeared to be proof against lead poisoning suddenly becomes the subject of it. There is the opinion that one attack of plumbism predisposes to another. It is common knowledge that some lead workers are more readily overcome by the metal than others. There is not only an individual but there is a family idiosyncrasy to lead. There is also a sexual predisposition, for females are more readily influenced by lead than males. It was on this account that female labour was abolished in the dangerous processes of white lead manufacture. This circumstance of itself did much to diminish industrial lead poisoning. Means for the removal of dust, adequate ventilation, replacement of the dry by wet methods of manufacture, personal cleanliness, use of baths, and periodical medical examination of the workers have done much to diminish the number of cases of lead poisoning, but electrical treatment in the manner subsequently to be detailed will with the above adjuncts render even more effective the means hitherto adopted to prevent industrial plumbism. For the suggestion I am indebted to Mr. T. M. Clague, of Messrs. Mawson and Proctor, chemists, of this city.

Fifteen months ago one of my lead-poisoned laboratory rabbits died after having received lead almost daily for three years. The animal, a male, was given solution of nitrate of lead dropped into the back of its mouth from a pipette. In the course of the three years it received 1095 grains of nitrate of lead, equivalent to 684 grains of metallic lead. Some months after having taken the drug the animal became painlessly paralysed. It was treated electrolytically by the two-bath system, the fore feet being placed in one bath, the hind limbs in the other, the positive pole being placed in the hind-foot bath and the negative in the fore-foot bath. Under this method of treatment the animal recovered the use of its limbs. In a few days it was quite well again. The administration of lead was resumed, and in the course of nine or ten months the animal again lost the use of its limbs. Treatment by the double electric bath soon restored the rabbit to its former health and vigour. By the end of another year these were again lost, the animal emaciated and died. In the liver, kidneys, and spleen there was found on microscopical examination a distinct increase of connective tissue, and from the liver and kidneys lead was extracted.

The educational points in this experiment are the length of time the rabbit took lead, the large amount of the metal taken, the recoveries from paralysis under the double electric bath treatment, and the immunity, natural or conferred, which the animal exhibited to lead. During life and when the animal was quite well large quantities of lead were found in the fæces, so that only very minute quantities of lead were apparently being absorbed.

It was after discussing with Mr. Clague the best electrical methods for removal of lead from the body of this animal during life, and the possible restoration of the rabbit to health, that de-ionisation by the two-bath method was adopted, and with the successful results already indicated. When an electric current is passed through a solution of a salt—that is, a united acid and base—the acid collects at the point where the positive wire comes in, and the base similarly goes to the negative pole. Thus $\frac{NaCl}{ZnSO_4}$ after the passing of the current appear as $\frac{Cl}{SO_4}$ at the positive and $\frac{Na}{Zn}$ at the negative. These two entities in each salt are termed ions, and they will flow through membranes. If the solution is applied to the skin ionisation occurs. This has been proposed and practised with some success as a means of introducing lithia or iodine or similar ions into the body. Taking the case of either of these drugs, we would naturally place the joint or limb under treatment into contact with the solution of the salt and lead to it the appropriate active electrode, while the other pole would be led to an indifferent part of the body; but if baths are used more current may be passed, and consequently more of the desired ions can be introduced. These remarks concern ionisation. Few persons would nowadays use one bath with both poles in it for such a purpose The treatment I am recommending is de-ionisation and the use of the two-bath system as the special feature both from the preventive and curative point of view. In the single-bath method, in which a part only of the patient's

body is immersed, some of the electrical current passes through the immersed part of the patient; it may possibly pass through the whole body, some of it through the liquid of the bath, but in the double-bath system the whole of the current passes through the body, and the desired polarity is thus ensured. As the positive pole is placed in one bath and the negative in the other there is only one possible path for the current to pass, only one possible direction in which it can flow. It is by this means that we explain the invariable presence of lead on the negative pole, also the rapid disappearance of the blue line from the gums of affected workmen.

Some of the white lead manufacturers in Newcastle have been kind enough to allow us to put to a practical test upon workmen in the factory the experience of the laboratory rabbit experiment already alluded to, and to these gentlemen I express my warmest gratitude; also to Dr. J. R. Baumgartner and Dr. Francis Irvine, the works medical men, for their concurrence and assistance. Mr. Clague fitted up the electrical installation in the factories and arranged a series of arm-and-leg baths whereby several workmen can have the bath at one and the same time. The bath is given for half an hour daily or every second day; the voltage employed is 16 and the ampèrage 20 to 40 milliampères. The positive pole is placed in the foot bath and the negative in the arm bath. The baths may be made of earthenware or wood, and the electrodes of pure aluminium. If the current is introduced gradually by a suitable rheostat no shock is felt, nor is any unpleasant sensation experienced by the men. The resistance of the bath water is reduced by adding common salt. This affords a means of regulating the current to suit a hypersensitive patient, although in all our cases no difficulties were experienced.

In going through a white lead works a careful observer is struck by the pallor, the sallowness, the cachectic appearance, and the expressionless features of the workmen. They have not the appearance of healthy men. They differ from groups of workmen employed in most other trades. In speaking to the men there is detected a distinct tremor of the naso-labial muscles of the face, and on examining the mouth a blue line may or may not be seen on the gums. In the urine of several of the men minute traces of lead may be found. Most of the men, although looking pale and sallow, do not complain of feeling ill. They may thus go on with their work for months or years until something happens, such as a cold or influenza, or there is a debauch, or without any explainable cause other than derangement of the emunctories, when the men who had been following their employment with regularity all at once, or gradually, complain of colic, develop wrist-drop, or some other sign of plumbism.

It is one of the regulations of the Factory Act that white lead workers shall have a warm bath at least once a week, and that they shall wash their hands and forearms, also rinse their mouth well before taking a meal and before leaving the factory. A warm bath does not always remove the lead dust which is adherent to the skin. Workmen who had washed with a medicated sulphur soap observed that the parts of the skin which had been lathered became brownish black owing to a deposit of sulphide of lead. If, therefore, a warm bath is obligatory, why should this not be the electrical bath, especially for men who are suspected or who are doubtfully becoming lead poisoned, since the muscles would be stimulated, their nutrition favourably influenced, and elimination of the poison promoted?

Taking workmen variously occupied in the lead factories, Mr. Clague and I applied ammonium sulphide to the skin on different parts of the body. Brownish discolouration almost immediately appeared. It was most marked on the palm of the hand; the colouration was always most marked towards the outer border of the hand and on the right more than the left. Even the skin of such protected parts of the body as the chest and calves of the legs gave the colour reaction, a circumstance which as the stain could be readily removed by brisk friction with soap and water pointed to fine white lead dust having found its way under the clothing and become adherent to the skin. It was interesting, too, when the application was made to the skin above and below the water-level marks on the arms which had been immersed in the bath to observe the rapidity with which the colour developed on the skin above the water-level mark and hardly at all below it. Brisk scrubbing quickly removed the brown stain above the water-level mark, but if the colour developed below this line friction did not remove it. These circumstances suggest that the lead was present (1) as dust lying on the skin and removable, and (2) deposited in the cells of the superficial layers of the skin. Where the skin was rendered brown by ammonium sulphide previously to the men taking the bath it was interesting to watch the disappearance of the stain when the arms were in the electric bath. Similar brown marks were found on the skin of persons who had become poisoned by drinking water impregnated with lead.

We have treated 14 men in the factories. Those whom we singled out for treatment were workmen who looked especially pale and cachectic. Although not voluntarily complaining, three of them did not feel quite strong, while one of the men had been off work for 10 weeks on account of complete paralysis of hands, fingers, and wrists. Most of the men had a well-marked blue line on the gums; nearly all of them had, but in varying degree, as tested by the dynamometer, paresis of the muscles of the hands, wrists, and forearms, so that they could not grip well. Under treatment by the double electrical bath method not only did the muscular power of the forearms and wrists improve, but the pallor of the face lessened and the men expressed themselves as possessing a feeling of well-being such as to which for months they had been unaccustomed. Recovery from complete wrist-drop under any circumstances is slow, but it is hastened by the electric bath. In the bath water lead is found. It was found, for example, in the bath water of the patient with double wrist-drop who had not worked for ten weeks. In his case the lead could only have come from the tissues of the body. Another interesting point, too, is that in most instances where lead was found in the urine before submitting the workman to the double electrical bath treatment less lead was found in the urine after the bath. How far this is associated with the vicarious function of skin and kidneys is a subject for further investigation.

Apart from the personal feeling of betterment which follows treatment, also the detection of lead in the water of the bath and on the electrodes in cases where men have for weeks not been working in lead, one of the strongest indications of the dispersing power of the electrical bath in regard to lead is seen in the rapidity with which a well-marked blue line on the gums will disappear. Under medicinal treatment such a line will take three to six months to disappear, but to our surprise and gratification in one man an intensely blue line had almost entirely disappeared after three baths. It is interesting to watch the effect of the electrical bath treatment upon the blue line. This becomes thinner, its continuity becomes broken, after which it gradually fades away.

Our experiments are still being pursued. If further trials and extended experience strengthen the opinions I have expressed then we have in the double electrical bath treatment of persons suspiciously the subjects of industrial lead poisoning, of those who are harbouring lead in their body without exhibiting symptoms, or of persons exhibiting doubtful symptoms, a means whereby the metal may be removed from the body, directly or indirectly, sickness and suffering prevented, and the labour capacity of workmen improved. The gain will be equally to employers, as well as to the employed. Should success follow the adoption of the treatment above advocated on a large scale it would make the white lead industry less dangerous than it has hitherto been. The bath is painless and causes no inconvenience when properly manipulated. Several workmen can have the bath at the same time. The treatment might be objected to by the workmen on the ground that it causes the blue line on the gums, which is one of the hall-marks so to speak of industrial poisoning, to disappear, but the Burtonian line is not always present, nor does its absence mean that the case is not one of lead poisoning. Besides, the treatment would keep workmen in better health, able to continue longer at work and to receive their full wages, while as regards employers, their liability would not be removed, but upon them there would fall fewer claims for compensation. In a word or two, the whole industry would benefit.

I have found the influence of the double electrical bath upon the more obscure symptoms of plumbism due to drinking water to be not less striking than in industrial lead poisoning.

As things are at present all is not right in the

world of lead. It we compare 1900 and its 1058 cases of lead poisoning with the year 1912 and 587 cases the figures are in one way satisfactory, but the deaths in 1900 were 38 and in 1912 they were 44. Taking the years in succession from 1905 to 1912, the numbers of cases notified and of deaths which had taken place annually were 592 with 23 deaths, 632 with 33 deaths, 578 with 26, 646 with 32, 553 with 30, 505 with 38, 669 with 37, and in 1912 587 with 44 deaths. In recent years the mortality from industrial plumbism has not fallen but risen. There has been no uniformity in the decline of cases notified, and this, too, during a period of years when regulations for the prevention of lead poisoning have never been better or their fulfilment more rigorously enforced.

As we do not know at what particular point a workman who has been absorbing lead into his system in excess of elimination of it suddenly or gradually develops symptoms of plumbism, my suggestion is not to wait for symptoms to appear, but to treat suspected cases. Next to combating with modified success tuberculosis and cancer, also the question of alcohol from the social standpoint, if anything can be done to reduce the amount of sickness in industries in which lead is used no effort on our part could be devoted to a loftier purpose or to a higher end.

Newcastle-upon-Tyne.

# INVESTIGATIONS INTO THE RELATIONSHIP OF THE TARBAGAN (MONGOLIAN MARMOT) TO PLAGUE.[1]

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## *Introduction.*

IMMEDIATELY following on the International Plague Conference held in Mukden in April, 1911, the Chinese Government, anxious to carry out the recommendations of the Conference, instituted the North Manchurian Plague Prevention Service. The primary object of the scheme was the formation for North Manchuria of a medical service equipped and ready to act and control any situation that might arise through an outbreak of plague in the district, and also to maintain hospitals at Harbin (in the headquarters of the service), Aigun (Taheiho), Sansing, Lahasusu, Manchouli, and any other town in the district where such an institution might be necessary. In addition medical service was to be given to the poor and destitute, and when the hospital accommodation was not required for plague cases, general, medical, surgical, and infectious diseases were to be treated in the wards. Further, medical officers in the service were to instruct the people in general hygiene, &c.[2]. It was hoped that the service would develop into a public health service for the whole of China. The Manchurian Plague Prevention Service was eventually established on a firm basis on Oct. 1st, 1912, although a year and a half previous to that date medical officers had been stationed at Manchouli, Harbin, Tsitsihar (capital of Heilungkiang province), and Lahasusu to carry out the objects for which the service was founded.

Among the delegates of the International Plague Conference, Mukden, April, 1911, it was generally believed that there was a close connexion between plague—or at least the recent epidemic of pneumonic plague of Manchuria—and the tarbagan or marmot (arctomys bobac, Schreb). So little was known about this animal and the grounds for associating it with plague were based on such slender scientific evidence—as will appear later in this report—that it seemed to me the first step in the investigation of this question was to organise an expedition into the country where the tarbagan abounds, and there to study its habits and the conditions under which it lives, and to carry out scientific investigations as to the presence of plague among the animals.

On the morning of May 26th, 1911, I arrived at Manchouli to make inquiries as to the conditions under which hunting took place, and to gather information which would prove useful in making arrangements for an expedition into the tarbagan country later in the year. My observations made at that time are embodied in this report. I left Manchouli on the evening of May 29th, and returned to Harbin. In the beginning of July rumours were afloat that a large number of tarbagans were dying in the neighbourhood of Scharasone (Transbaikalia, Siberia). On July 11th I left Tientsin with orders to organise an expedition to investigate into the matter, as the Chinese Government was most anxious that all measures should be taken to forestall a possible spread of plague to man. The Manchurian authorities agreed to build hospitals for plague at all the important centres, and instructed me to staff them with properly qualified medical officers; and from the Viceroy at Mukden downwards all the officials took great interest in the proposod expedition. In the *Peking Daily News* a correspondent at Station Manchouli wired that "the tarbagan epidemic of Siberia is spreading southwards towards the Chinese frontier. Dead marmots are now found as far south as Scharasone, which is only 35 miles north of the Russian-Chinese frontier. Local measures are sufficiently strict to prevent the disease from entering Manchuria."

Arriving at Harbin on July 15th, I called on Professor Zabolotny, who was at that time working at certain plague problems in the Russian laboratory of that town. After showing me his specimens and telling me the results of his investigations—a note of which appears in this report—he invited me and my party to proceed with him to Manchouli in a special car provided by the Chinese Eastern (Russian) Railway. I gladly availed myself of the invitation. It is interesting to note that this was the first scientific expedition sent out by the Chinese Government. The Russian party consisted of Professor Zabolotny, Dr. Tschourilina (a lady), and Dr. Issaief. Our own party consisted of Dr. Chén Sze-pang, M.B. Cantab, Dr. Tsang Pu, and myself. Our investigations form the basis of this report.

## *Itinerary.*

Leaving Harbin, we arrived at Manchouli station on July 21st, and arranged that this should be the base of the Chinese expedition. We gave instructions that huts should be built for us, for the laboratory, and for the animals. The next day Dr. Ch'en and myself left for Borsja (Transbaikal district) to join the Russian party who had their base there. (Borsja is 121 versts west of and three hours by express train from Manchouli, 3 versts equalling 2 miles.) We remained with them for a week, visiting Tschintansk, Arabulak, and the neighbouring villages. On July 29th we returned to Manchouli to rejoin our party. A few days afterwards the Russian staff broke up, Professor Zabolotny and Dr. Tschourilina returning to St. Petersburg and Dr. Issaief to his station on the Russo-Chinese frontier.

Our start for Mongolia to make further investigations was delayed by the rainy weather until August 6th. Proceeding westward, we reached Charbada on the 7th, when we encamped for two days. On August 9th we left for Kerloni. As there was no direct way there we had to return to Manchouli, and from thence proceeded in a south-westerly direction parallel to the large but shallow river called Kerulen, which after it has passed through Kulun Nor (Kulun See) is called River Argun, and later on becomes the Amur. We travelled southwards, passed Zagan on the east, and after two days reached the large lake Kulun See. Finally, we encamped at Kerloni—a Mongol colony situated on the river—on August 11th. We then proposed to visit Abagaitui in Siberia by way of Dalai Nor, but our guide informed us that this was impossible, as it would mean crossing a mountainous district where there was no water. On the following day, therefore, we decided to return to Manchouli, which we reached on August 14th. From this date until August 25th we lived at Manchouli, making excursions into the country around and doing experimental work with tarbagans.

[1] Abstract of a paper read in the Section of Tropical Medicine and Hygiene at the International Congress of Medicine. In the compilation of this paper I have received much assistance from my colleagues, Dr. S. P. Ch'en, M.B. Cantab., senior medical officer, Harbin, and Dr. F. E. Reynolds, M.B. Edin., bacteriologist to the service, to both of whom I wish to express my thanks.

[2] Incidentally, it may be mentioned that the Chinese Government had already established isolation hospitals and segregation camps, each capable of holding from 400 to 2000 persons, at the important railway centres of Shanhaikuan, Mukden, and Koupangtzu, and at the seaport of Yingkow (Newchwang). The director of the North Manchurian Plague Prevention Service is consulting physician to these establishments.

On August 25th I departed from Manchouli in order to inquire into an outbreak of plague which was reported from Puk'uei (Tsitsihar, capital of Heilungkiang Province) and from thence went back to Harbin. I left Dr. Ch'en at Manchouli to finish our work there and to make any other investigations that might be required. He left Manchouli for Harbin on Sept. 30th, 1911, as the evenings were getting too cold for further stay in camp.

*Manchouli.*

The principal marts in the Manchurian provinces for tarbagan skins are Manchouli (875 versts, or 583 miles, by rail west of Harbin) and Hailar. Hailar is 116 miles (174 versts) by rail east of Manchouli station, but as the latter is the only customs station for the district, skins sold in Hailar have to be sent there for exportation. The chief Russian mart is Borsja (Transbaikalia), some 80 miles (121 versts) west. Manchouli is situated in Chinese territory at the junction of the Chinese Eastern and the Trans-Siberian railways, and is about ten miles east of the frontier between the province of Heilungkiang and Siberia. Here are established the Chinese and Russian Customs for the examination of goods and baggage passing along the railway from one country to the other—Manchouli having been opened as a customs station in February, 1907. Most of the information which follows about the place was obtained when I visited the town at the end of May and again in August. Manchouli lies 2600 feet above sea level, and is surrounded on all sides by low barren mountains. The water is saltish, hard, and scarce. The railway zone covers a large area, and consists of four sections: (1) The Private Settlement, containing 5000 Russian and 1500 Chinese inhabitants; (2) the Chinese Eastern Railway Settlement, containing about 700 inhabitants, mostly Russian; (3) the Transbaikal Settlement, containing 800 inhabitants; (4) the River Settlement on the further side of the "river," a shallow ditch some 5 feet wide. Altogether, the population of Manchouli may be estimated as consisting of 8000 Russian civilians, customs officials, &c., 3000 Russian troops, and 2000 Chinese, most of whom are of the coolie class. During the Russo-Japanese war there used to be as many as 40,000 to 50,000 people resident at Manchouli.

(*a*) *Occurrence of plague at Manchouli and surrounding districts.*—In 1898 Professor Zabolotny was in Mongolia and found plague in the region he visited. Between this date and 1905 I could gather no reliable information as to the occurrence of the disease in or around Manchouli. Dr. Bissemsky, the Russian physician in charge of the railway at Manchouli, supplied me with the following interesting information regarding outbreaks of plague which had occurred in his district since he went there in 1905:—

1905: Plague occurred in August at Dalai Nor (14 cases) and in Manchouli (4 cases). Total, 18 cases. Bubonic type. (Dalai Nor is the first railway station, 23 versts east of Manchouli.) 1906: Plague occurred in Abagaitui (Russian territory), 15 cases, and in Manchouli (2 cases). Total, 17 cases. Pneumonic type. (Abagaitui is 20 miles north of Manchouli.) 1907: One case was imported from Transbaikal territory into Manchouli. Bubonic type. 1908: There were no cases of plague in Manchouli, but there was reason to believe that the disease was present among the Mongols along the Argun river. There is some doubt as to the type of the disease, but it seems probable that it was pneumonic. 1909: No cases reported. 1910: The last epidemic with 400 cases at Manchouli. Pneumonic type.

To bring it up to date the above information may be supplemented as follows:—

1911: End of August, 5 cases at Scharasone, 4 deaths. Bubonic type. 1912: Beginning of September, near Chita (capital of Transbaikalia). Three cases. All fatal. Evidently pneumonic type (confirmed by P. Haffkine). (Chita is 447 versts west of Manchouli.)

In regard to the above outbreaks it is interesting to note that those of 1905, 1906, 1907, 1911, and 1912 were confined to Russians and Cossacks, no Chinese having died, whilst in 1908 only Mongols died. In the epidemic of 1910–11 both Russians and Chinese were attacked, but mainly the latter; of 400 fatal cases at Manchouli only about 15 were Russians, and these were mostly hospital attendants. For some reason which we cannot explain, during the epidemic of 1910–11, the Russians escaped even when some of them lived with Chinese coolies who took the plague.

In considering the occurrence of plague at and around Manchouli, it must be borne in mind that the disease is endemic in the Kirghiz Steppes,[3] and from time to time this has travelled eastwards, giving rise to sporadic outbreaks in Eastern Siberia. This subject has been treated carefully in a series of articles written by the British delegate to the Constantinople Board of Health[4] and by the Russian Dr. Koltshof,[5] quoted by the British delegate. So important is the subject in reviewing the occurrence of plague in Manchuria that I quote these articles at some length. For convenience the subject has been considered more or less in chronological order.

Koltshof gives the following summary of the epidemics in the Bukeëf Horde of the Kirghiz Steppes of the Astrakhan government during the 12 years preceding 1911. The disease generally gives rise to two annual epidemics—one in summer, the other in winter. [Details were here given relating to the years 1899–1910.]

In Odessa, from May 22nd to August 28th, 1910, there were 97 cases of plague, of which 24 were fatal; and at the beginning of October, 1910, there were 4 cases.

In July, 1910, plague appeared in the Kirghiz Steppes—namely, in the Asiatic province of Semiretchinsk and in two villages of the Abbastin quarter in the Prjevalsk district of that province; there were 17 cases of pneumonic plague, all fatal, between July and August 11th. No further information regarding this outbreak has been published.

In the Uralsk government, in the five villages of the Jambeitinsk district, between August 10th and 14th, there were 7 cases of plague with 3 deaths. It should be noted that the dates given above are according to the old style calendar, which is 13 days later than the Gregorian.

Concerning the outbreak of pneumonic plague at Manchouli in the autumn of 1910, the following occurs in Dr. Ch'nan Shao-ching's paper read at the International Plague Conference (see Report, p. 28):—

Observations reported to me by Chinese residents at Manchouli show that two carpenters who lived in the house adjoining Wu Kuei-ling's Inn died with spitting of blood on the 10th day of the 9th Moon (Oct. 10th). These two carpenters had been in the service of a foreman named Chang Wan-shun at Dawoolya (Daurija), a railway station in Siberia situated some six miles west of the boundary line. Chang Wan-shun told me that six or seven of his carpenters had died with blood-spitting in Dawoolya on the 13th day of the 8th Moon (Sept. 16th), and said he believed that plague had appeared in Dawoolya before it was known in Manchouli. "Later on, it was found that 9 out of 20 coolies, who lived in a small room in Wu Kuei-ling's Inn, were suddenly taken ill with blood-spitting. One of them was sent to the Russian plague hospital, and it was discovered that he suffered from pneumonic plague. Two died in the house that same night, but the rest ran away to different places in the town, and thus disseminated the disease."

[Returning to the articles already referred to in THE LANCET, details followed relating to the years 1910–12 as to various outbreaks of plague, largely of pneumonic type, in the Kirghiz Steppes and elsewhere.]

(*b*) *Prohibition of tarbagan hunting.*—During February, 1911, the (Chinese) Prefect of Manchouli prohibited the hunting of the tarbagan, the penalty for disobeying this order being two months' imprisonment. In the following April a further order increased the punishment to six months' imprisonment. Up to June, 1911, several Russian and some 20 Chinese hunters had been arrested, and since then no one had been found hunting. On August 11th, 1911, a General Order, No. 26, was issued by the Russian authorities forbidding trade in marmots. From inquiries made from the Russian police at Manchouli on August 21st it appeared that they had read of the order, but up to the time had not received official notice of it from the head office in Harbin. Consequently they were not empowered to put any hindrance on the trade in marmot skins, although since the beginning of the year they had required before granting permission to export a formal guarantee that the raw skins had been sent to the local railway doctor for disinfection.

Up to 1908 comparatively few Chinese hunted the tarbagan. In the autumn of that year and in the autumn of 1909 several thousand Chinese, attracted by the high price paid for the fur, were in the neighbourhood of Manchouli, and in 1910 the number reached 10,000 hunters. Owing to the Chinese order prohibiting the hunting of tarbagans, there were fewer Chinese in Manchouli during 1911 than formerly, and in consequence low-class so-called lodging-houses, which used to be occupied by the hunters, had been left almost empty. The camping-grounds just outside the town where the Mongol hunters used to erect their tents during the hunting season were also deserted.

(*c*) *The Inns.*—The inns are of two kinds—those entirely

[3] The Kirghiz settlements are situated in the governments of Astrakhan (Europe), Uralsk, and Semiretchinsk (Asia). The area covered by these three governments is a very large one.

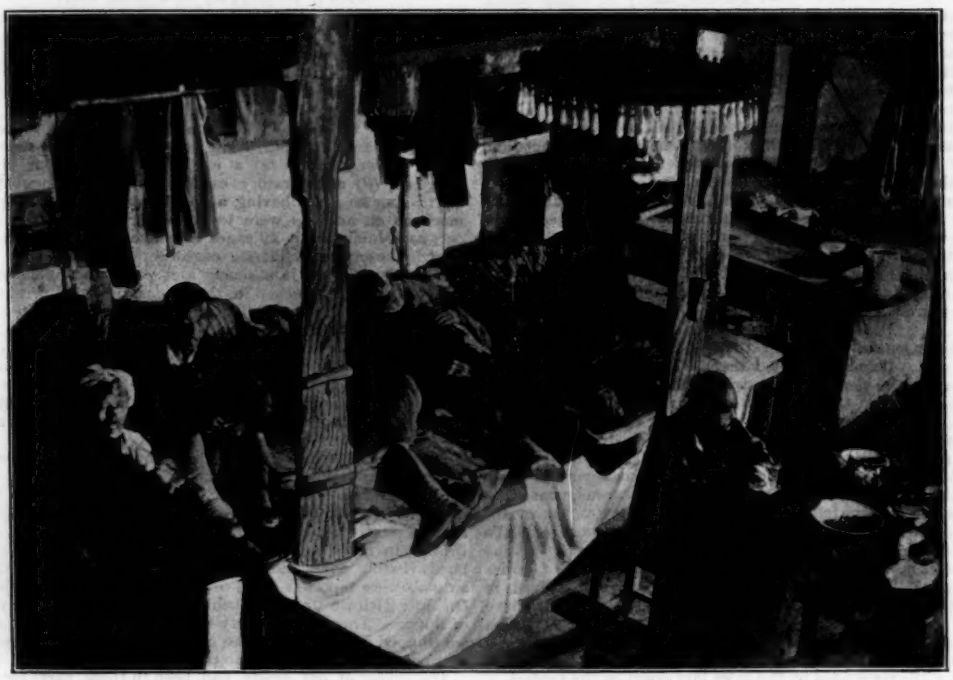
[4] THE LANCET, April 24th, 1909; Jan. 7th, 1911; June 3rd, 1911; March 9th, 1912.

[5] Vratch, No. 35, August 27th, 1911, quoted in THE LANCET, March 9th, 1912.

FIG. 1.

Gateway of an underground inn at Manchouli, which is here shown barred with wooden planks.

FIG. 2.



Interior of an underground inn at Manchouli showing the lower tier of berths. To take the photograph from which this figure is reproduced it was necessary to lie at full length on one of the upper berths.

underground and those partly above ground and partly underground. (Fig. 1.) Those partially underground are more popular in cold weather because of their greater warmth; in winter the outside temperature as a rule reaches −30° to −40° C., and the ground is frozen to a depth of between 6 and 8 feet. The windows appear just above the ground, and their roofs are made of mud.

The accommodation in both types of inns is based much upon the same plan. Two, and sometimes three, tiers of berths for the lodgers are present, there being just room enough between the tiers for a man to sit up. In one house I visited there were 40 berths—20 above and 20 below—the measurements of the room being only 25 feet square and 14 feet high. Fig. 2 shows the interior of an underground inn. Even in May the rooms were ill-ventilated and stuffy. In winter, when all the windows are closed and the fires are lighted, the stuffiness must be great. Dr. Ch'uan visited some of these inns in the winter. His report showed the conditions to be bad in the extreme. In one hut, 15 feet square and 12 feet high, there were packed in three tiers of berths, one above the other, more than 40 people. The windows were closed, and there was a heating stove in the middle of the room. The odour was indescribable, being made up of a mixture of foul breath, the vapours of old dirty fur garments, and decomposing pelts which were lying alongside the men. The usual way of heating these inns is by means of a *k'ang* on either side of the central passage leading from the door. A *k'ang* is a horizontal brick flue about 5 feet wide and 2 feet high, at one end of which is an opening where is lighted a fire of wood or *kaoliang* (millet) stalk. At the other end of the *k'ang* an opening is made through the outside wall of the house, and leads to a chimney for the escape of the smoke. *Kaoliang* stalk is cheaper than wood, and hence is usually used in poor houses; the heat produced is not very great, but is sufficient to keep the room at 2° to 5° C. even when the thermometer outside registers − 20° C. The windows are few in number, and usually made of a wooden framework pasted with white paper, thus keeping in the heat but allowing little sunlight to penetrate. The men eat, sleep, and very often cook in the same room. They sleep in rows with the head against the wall and the feet towards the central passage. There is no partition between adjoining berths, so that they easily breathe and cough into each other's faces. Their food consists mainly of millet bread, boiled cabbage, and boiled turnips; they have meat perhaps once a month. For board and lodging the hunter pays at least 15 roubles a month; in busy times more.

The winter clothes usually consist of a pair of padded cotton trousers, padded socks, and thick-soled Chinese shoes, two or three layers of body clothing, and a long cotton-padded gown, reaching to the ankles. In very severe weather they wear in addition long sheepskin garments and fur caps. During winter the men seldom change their clothes which abound with insects—e.g., lice, fleas—but in summer they lay aside their thick outer garments and wash the inner ones, using them alternately. Unless very poor, the winter trousers are then replaced by thinner ones, which cost about a rouble (2*s.* 1*d.*) each.

In these inns I have found coolies from Shantung and Chihli, Manchus and Mongols; in addition the hunters consist of Buriats and Cossacks. These unhealthy huts are owned by Russians, and were built originally for their poor-class nationals, but perhaps they were never so overcrowded as when Chinese occupied them. From 1908 to 1910 so many people came to the districts to hunt the tarbagans that the owners of the inns did a roaring business, and packed the men in every available space, extra tiers being added whenever possible above those already existing. It should be remarked that the number of Mongols regularly resident at Manchouli seldom reached a dozen; but at certain times of the year, especially in summer, large caravans, consisting of whole Mongol families, pitched their tents on the vacant space in front of the *yamen*—that is, a Chinese official's residence or place for transacting official business. At the time of my visit in July, 1911, there were nearly 50 families (some 150 people in all) thus encamped. Some lived in tents, others inside their rickety carts. These vehicles have no springs and no metal rims to the wheels. On such occasions the Mongols brought with them for sale horses, cattle, and sheep, as well as skins. They were very orderly, and willingly abided by the rules laid down by the prefect.

(*d*) *Proposed Chinese hospital at Manchouli.*—Soon after the International Plague Conference it was decided to build a plague and a quarantine hospital at Manchouli. The hospital was to have accommodation for 20 plague cases, 20 suspect cases, and 150 contact cases, and was to be in charge of a senior medical officer with European degrees, resident permanently with a trained staff. Plans had been submitted and selected and the work begun, but winter stopped the work temporarily. Soon after came the revolution in China, followed in January, 1912, by the troubles in Mongolia. Among the things destroyed at Manchouli by the Mongols were the schools, the *yamen*, and even the foundations and materials intended for the new hospital.

(*e*) *Note on the fur trade at Manchouli.*—[Returns were here given showing the great increase in the trade in the years 1908–12. It was estimated that in 1910 2,000,000 tarbagan skins in all were exported from Manchouli. In June, 1913, over 4,000,000 tarbagan skins were lying at Manchouli ready to be carted by road to Mazijewsskaia for export to Europe.]

### *One Isolated Case of Plague in a Tarbagan.*

When I visited Harbin in May and again in July I called on Professor Zabolotny, who was working there at certain problems in connexion with plague. I believe that a full account of these has been published already. (1) Amongst other things he mentioned to me that a tarbagan had been caught on June 24th by Dr. Issaief near Scharasone on the Siberian side of the border, suffering from plague, and died soon afterwards. Zabolotny showed me the organs of this animal. There were marked signs suggesting plague in the spleen, lungs (hæmorrhages), and there were cervical buboes. Growths obtained from the organs gave pure cultures. From one of the cultures thus obtained Zabolotny inoculated in Harbin a healthy tarbagan on the right leg, and produced two large buboes in the right groin only. This animal died from septicæmia. (2) Four other tarbagans were suspected to have died from plague. At the time when I met Zabolotny the diagnosis of these four cases was not complete. Later, however, it was found that none of the cases were plague. (3) During July, Zabolotny had received reports of large numbers of tarbagans dying north of the river Borsja, in the neighbourhood of Kerulen. We decided to equip a joint scientific expedition and visit the spot without delay.

### *Work at Borsja, July 22nd-29th, 1911.*

Borsja (Siberia) is 121 versts west of Manchouli on the railway, and is the centre of tarbagan hunting in the Transbaikal district. During our stay there no hunting was being carried on, being forbidden. There were some 200 to 300 Chinese engaged in small business; usually these depended on the Cossack hunters. On the morning of July 22nd we arrived at Borsja, and joined Professor Zabolotny and his staff. The accommodation consisted of three railway cars: (*a*) a car fitted up for our living quarters; (*b*) a laboratory car fitted up with incubators, sterilisers, &c., and having a compartment in which post-mortems on animals were to be performed; (*c*) an animal car, containing about 40 cages in which tarbagans could be kept for observation. These cages were mostly oblong, and were made of thin iron sheets and ventilated by means of round apertures punched in their sides. Special permits to hunt were given to skilled Russian hunters, who were instructed to bring in specially any sick tarbagans. For healthy animals we offered 1 rouble, and for sick ones 5 roubles. Forty tarbagans were kept for observation in the cages; when we had satisfied ourselves that they were perfectly healthy they were released, and others put in their place. In this way about 80 tarbagans came under observation.

During the week we spent at Borsja no sick tarbagans were brought in and none of those under observation showed any sign of disease. On the day of our arrival at Borsja we performed post mortems on five tarbargans and found all of them perfectly healthy. Professor Zabolotny, Dr. Ch'en, and I drove in carts and also walked over the whole neighbourhood, visiting particularly the places where sick and dead animals were reported to have been found in large numbers. On July 24th we drove to Tschintansk, a village south-west of Borsja. There were plenty of tarbagans on the way, and we stopped and examined the country at different stages of the journey, but could find no trace of sick animals.

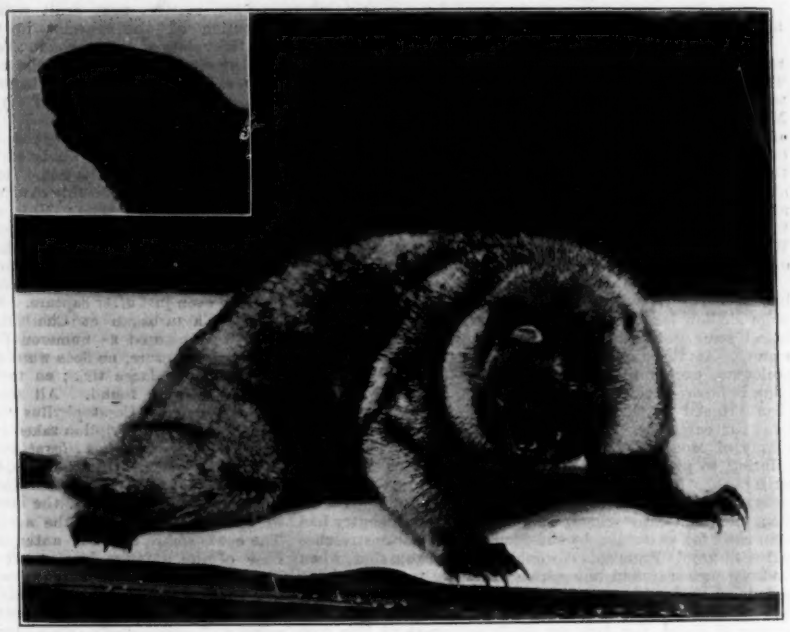
The driver of our *drosky* had been in these parts for the

last 27 years. He informed us that as early as 1884 tarbagans had died from an epidemic in this neighbourhood, and that one day a Russian doctor and his dresser, stationed at Akscha, performed a post-mortem examination on a hunter who had died under suspicious circumstances. They both took ill, and two days after performing the post-mortem they died in this man's *drosky* whilst trying to get back to Akscha. He remembered that both were exceedingly short of breath. Unfortunately for the veracity of this account our *izvostchick* was very fond of *vodka*, as we experienced after leaving Tschinkantsk—he driving very recklessly and eventually dashing up a high bank and upsetting the carriage on the top of us!

From Tschinkantsk we went to Arabulak—a "village" consisting of one solitary post-house, and looked after by a Cossack family. Here we stopped overnight. The country between Tschinkantsk and Arabulak, as well as the high hills surrounding the latter place, abounded in tarbagans. Our party divided up, and we inspected hundreds of holes, but found no trace of sick or dead animals—not even tarbagan remains being seen. On the following morning we got up at 4 A.M. to see if the tarbagan came out from its hole at dawn seeking food, as some believe to be the case. But during the next six hours we did not see more than five tarbagans. We then returned to Borsja.

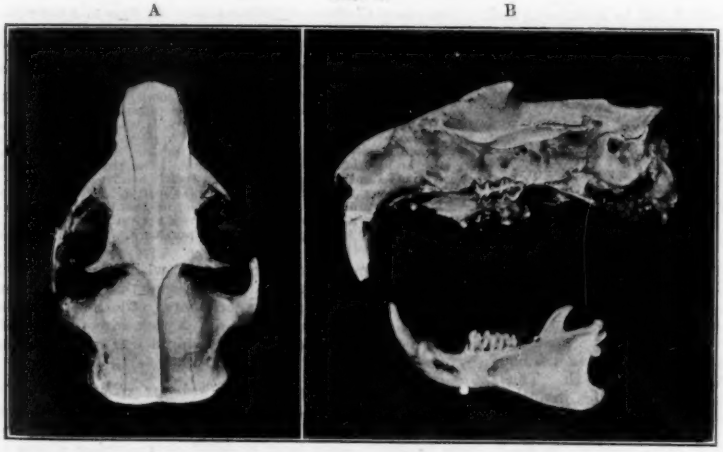
In the afternoon (July 25th) we went out all around the neighbourhood of Borsja, and although we inspected many holes no trace of a sick animal was found. On July 27th a dead tarbagan was found four versts away. We judged the animal to have been dead some 48 hours. The lymphatic glands were dark in colour, but not enlarged, whilst the spleen was double its normal size. Full bacteriological examination, however, did not reveal any bacillus pestis. On July 29th we all returned to Manchouli, it having been decided that the Chinese expedition should pursue further investigations in Mongolia. While at Borsja we performed experiments to try and ascertain if cannibalism was common among tarbagans. In one of these an animal was starved; after some days a dead animal was introduced into the same cage, but at the end of five days the carcass had not been mutilated. I wish to take this opportunity of expressing my indebtedness to Professor Zabolotny for his unfailing courtesy on all occasions when I had the pleasure of being associated with him.

FIG. 3.



A sick tarbagan. Note the scar on the head due to fighting before capture. The inset shows the head of the tarbagan in profile.

FIG. 4.



Skull of a tarbagan A, As seen from above, and B, laterally

*Work in Mongolia, August 4–13th, 1911.*

On August 4th we left Manchouli for Mongolia. Our party and equipment consisted of three medical men—Drs. Ch'en, Tsang, and myself; one interpreter, who spoke Russian, Mongol, and Chinese; one sergeant and six mounted policemen (Chinese); one Finn tarbagan hunter—this was the hunter who caught, in the previous April, the 12 tarbagans for the International Plague Conference; two carriages; three carts for tents, baggage, provisions, &c.; 19 horses and ponies. Our laboratory equipment consisted of two microscopes, media for use, traps and snares for tarbagans, cages, apparatus for experiments with fleas, &c. The weather was good all day, and in the evening we encamped at Tarbagan Ta Hu, 30 li south-west of Manchouli, 1 li

equalling ½ English mile. The water in a lake close by was briny, and we had to depend on the stock brought with us. Swarms of mosquitoes were encountered here, mostly Culex, but also A. maculipennis.

(*a*) *Charbada.*—On the following day, August 5th, we reached Charbada—a village 63 li south-west of Manchouli. The country *en route* showed nothing but long grass and tarbagan mounds. From inquiries made among these Mongols, I learnt that there had never been any outbreak of disease resembling human plague in their midst. Nor could I obtain any word of disease among the tarbagans: the country in which they had lived for many years past abounds in tarbagans, yet they have never noticed the animals dying. We ourselves laid traps and caught several tarbagans, but none of them showed any signs of disease. We scoured the neighbourhood for remains of the animal—e.g., bones, skulls, carcasses, but could find none.

Leaving Charbada, we made our way backwards along the banks of the river Kerulen, and arrived at Kulun See—a large shallow lake of semi-alkaline water. On the way we found some good camping grounds where there was fresh water. At these places we saw collections of tarbagan skeletons, each numbering from 50 to 80 sets of bones, lying in heaps—evidently the remains of animals which had been skinned by the hunters, who had afterwards thrown away the carcasses. At Kulun See we camped with another colony of Mongols. Here again we could get no history pointing to plague either among the Mongols or among the tarbagans. In the country around, although plenty of tarbagan holes were met with, few of the animals were seen, and our traps seldom caught any. The country had been used for pasturage by the Mongols and large stretches had been fired. From this it would seem probable that, when food becomes scarce in one region, the tarbagans migrate to regions where food is plentiful.

From Kulun See we proposed to go to Abagaitui (Siberia) by way of Dalai Nor, but our guide informed us this was impossible, as it would mean crossing mountains where there was no water. (Dalai Nor is a village 28 versts east of Manchouli, and contains a coal-mine supplying coal to the railway.) We therefore returned to Manchouli, reaching there on August 31st.

*The Tarbagan or Marmot (Arctomys Bobac, Schreb).*

The species to which the tarbagan belongs is known in America as the woodchuck (Arctomys monax). The Russians call it "szuriok" and the Chinese "Han T'a," but the name most familiar is the one adopted by the members of the International Plague Conference—namely, "tarbagan"—a term derived from the Mongols.

The marmots belong to the order of rodents, and are classed under the simple-toothed variety. They possess the following common features: (1) the presence of four molars on each side of the lower jaw; (2) the presence of five molars on each side of the upper jaw; (3) the zygomatic arch is formed principally of the malar bone and not of the maxillary bone.

The particular variety of marmot found in Manchuria and Mongolia is identified as Arctomys bobac, Schreb (or the true marmot). (Figs. 3 and 4.) The following are some of its distinguishing features:—

1. The body is stout and the limbs are short. 2. The tail is bushy and comparatively short, being about one-half the length of the body. 3. The head is wide and short and there are no cheek pouches. 4. The eyes are large and full. 5. The ears are small and more or less rounded. 6. Of the five toes, the thumb is rudimentary, being supplied with a flat nail, whilst the claws of the remaining four are long and exceedingly sharp. 7. The rows of molar teeth are placed nearly parallel to each other, both in the upper and lower jaws. 8. The fur is of moderate length and of a fine texture. The general colour tends to change at different seasons of the year, varying from a light greyish brown in the spring to a reddish brown hue in the late autumn. On the back and around the eyes the fur is darker in colour. 9. The length of the adult animal exclusive of tail varies from 15 to 18 inches (37 to 45 cm.). 10. The weight of the adult animal varies from 9 to 12 lb. (4100 to 5400 grm.), being greater as the hibernating season approaches.

After returning to Manchouli from Mongolia, a series of morning and evening temperatures were taken on these animals by us. The temperature taken per rectum presented wide variations in different animals and in the same animal at different times—even in apparently perfect health. Thus, in some it was found to be 95° F., in others 96°, in others again 97°, and so on until in one animal 107·6° was registered. This last case was particularly interesting in that this temperature was taken soon after capture. It died, however, 20 minutes after the temperature was taken, and 61 minutes after capture. At the post mortem nothing abnormal was found. In one of the animals the temperature varied from 98·5° to 104·8° within the space of three days.

[The matters next dealt with were: (*a*) The wide distribution of the marmot in the northern hemisphere; (*b*) the habits of the tarbagan; (*c*) habitat; (*d*) hibernation; (*e*) the method of catching the tarbagan and (*f*) the killing and skinning; (*g*) the tarbagan in commerce; (*h*) the tarbagan in captivity; and (*i*) forceps for handling the tarbagan. Then followed:—]

(*j*) *Parasites of the tarbagan.*—In its natural state the tarbagan harbours two kinds of blood-sucking arthropods—namely, the flea and the tick. The fleas were more numerous on the animal when freshly caught than after it had been in captivity for some time. Most of the fleas were caught in the groins, but often they were distributed over the whole body. The ticks were usually attached to the eyelids, but on one occasion we found two ticks on the abdomen and none on the eyelids. The number of fleas per animal varied greatly even just after capture. For example, we caught 94 fleas on a tarbagan at Charbada; the fleas on tarbagan No. 18 were noted as numerous; on tarbagan No. 23, three days after capture, no fleas were found, but only four small ticks and one large tick; on tarbagan No. 28 two fleas and two ticks were found. All the fleas were of the same species—namely, Ceratophyllus silantievi, Wagner, 1898. I append a short description taken from those we collected.

*Fleas. Ceratophyllus silvantievi.*—An eyed, single-combed flea of large size. Of six males, the shortest was 1·97 mm. long, the longest 2·34 mm., whilst the average length was 2·2 mm.; of 13 females, the shortest was 1·48 mm., the longest 3·07 mm., whilst the average length was 2·82 mm. The eye is small, and the antennæ are well developed; the base of the antenna is situated at some distance directly above the eye, and the antenna when lying in the groove is directed downward and backwards. There are three bristles, one in front of the other, anterior to the eye. The maxillary palps and mouth parts (epi-pharynx, mandible, labium) are long and well developed. Springing from the posterior border of the first thoracic segment is a comb consisting of nine bristles on either side. The mesosternite has a vertical thickening (bar). The inner aspect of the femur is studded with numerous hairs. The posterior border of the hind tibia presents six pairs of bristles. The last joint of the tarsus has six bristles on either side, and the claws are fairly long. There are nine bristles inserted on either side near the posterior border of the tergal plates. The antepygideal bristles are three in number on each side.

(*k*) *Biting experiments with fleas and ticks obtained from the tarbagans.*—The insects were removed from the tarbagans directly the animals were caught, and were placed in test-tubes. The following experiments were carried out by us when in Mongolia, and later on our return to Manchouli. As will be readily understood, the conditions did not permit of detailed and prolonged experimentation, and this record is given merely as a preliminary communication on the subject.

*Experiment 1.*—When at Charbada, some six fleas in a test-tube, immediately after their removal from the tarbagan, were given the opportunity of biting one of us. Even after several minutes none of them had bitten.

*Experiment 2.*—August 10th, 1911: Ceratophyllus silantievi, 1 male, starved for three days. Then given facilities for biting the arm of one of the party. The insect moved about for some minutes before biting. It chose a spot in a fissure of the skin, and plunged its proboscis deep in. While sucking its body was tilted upwards, and the insect was seen to increase in bulk. It remained thus for eight minutes, and then, having withdrawn the proboscis, fell on its side. Afterwards it began moving around less actively than before. The person bitten experienced no pain and very little sensation, both when the flea pierced the skin and during the time the insect was sucking. After the flea had withdrawn its proboscis, the site of puncture was barely visible to the naked eye, and with the aid of a hand-lens a very slight escape of blood was seen to have taken place from the puncture. There was no after-swelling or irritation.

[Two other similar experiments with fleas were also described.] The ticks (species rhipicephalus) were collected in test-tubes, and similar experiments to those with the fleas were carried out. In no case did a tick bite the arm of a human being, although the tick used in one experiment had been starved for eight days.

*Evidence Associating the Tarbagan with Plague.*

The tarbagan has been said to suffer from a chronic form of plague not unlike the form seen in rats. From time to time epidemics have been reported as occurring among the tarbagans, causing them to die in thousands. It has been said that hunters easily recognise the sick animals—these

often being driven out from their holes to wander about aimlessly until they die. The piteous state of these animals has been graphically described. If a human being takes plague, and has eaten of the flesh of the tarbagan—a very common food among the Mongols and Cossacks—it has been stated forthwith that this is the source of infection. Indeed, whenever a case of human plague occurs in a remote district of the tarbagan country, it is stated almost invariably that the disease has resulted from the eating of tarbagan flesh. Some of the epidemics referred to as occurring among the inhabitants of the Kirghiz Settlements were said to have been associated with a disease in camels, and one case of human plague was said to have followed the consumption by the patient of the flesh of a camel stricken with plague. To quote further examples would be useless, and to mention individual authors invidious.

It is my purpose to review the facts which have so far been ascertained bearing upon the relationship of the tarbagan to the outbreak of plague in human beings. It need scarcely be said that before a diagnosis of plague is established a complete bacteriological examination must be made. It has been definitely established that rats suffer from plague, and from them the disease is conveyed to man. The chronic form of plague has been found among the gophers or ground-squirrels (Citellus beecheyi) of the mountains of Western America by McCoy. Mice and guinea-pigs are susceptible to artificial infection with Bacillus pestis. Strong and Teague, Zabolotny, Dujardin, Beaumetz, and Mosny have shown that the tarbagan also is susceptible, and Shibayama has demonstrated that Spermophilus citellus, the small species of marmot common about Mukden, is susceptible to plague, though not so susceptible as the rat.

Since these rodents are susceptible to plague, and since the disease occurs in nature among rats and ground-squirrels, *a priori* it is conceivable that it occurs among tarbagans in nature. Let us examine the evidence available to establish this as a fact. An epidemic among the tarbagans was reported in July, 1911, and the Russian and Chinese expeditions at once visited the country where this epidemic was supposed to exist. Not only did the expeditions fail to discover a single diseased tarbagan, but inquiries made by us directly from the hunters showed that they knew nothing of the alleged epidemic. In the experience of these hunters not only had no epidemic ever occurred among the tarbagans, but they had never even seen sick ones. In Mongolia the Chinese expedition had similar results, nor could any news be obtained of disease, past or present, from the Mongol hunters. In passing, I would emphasise that information was sought by us direct from hunters who were experienced men, and who had spent their lives living and hunting in the country where the tarbagan abounds. Moreover, two of the police who accompanied us on our Mongolian expedition were formerly tarbagan hunters; and the Finn hunter whom we took with us had been hunting regularly for the past five years, and could recall no case of tarbagan disease.

Dr. Ch'uan, in his paper at the International Plague Conference already referred to, stated:

> I had several talks with the marmot hunters, and inquired whether they knew of the occurrence of any cases of sickness, such as blood spitting or of sudden death during their hunting season on the hills. They replied that they had never known of such cases either on the hills or on their return journey, and that only at Dawoolya, Manchouli, or other towns did the plague attack the marmot hunters and others.

The inquiries we made on this point from the hunters elicited the same information. We did not hear of any case of plague having occurred amongst them while on the plains. It is well to state here that although the tarbagan hunters dispersed in pursuit of their business, staying away for one or several weeks, they usually reassembled at the regular camps, there to skin the animals captured. Moreover, although millions of tarbagan skins were exported yearly to Europe, and thus handled by hundreds of people, from the hunter and the railway porter to the factory labourer, no case had ever been reported of plague infection in human beings during the transit of such skins. It is also very doubtful whether plague occurs as a result of eating plague-infected flesh. As bearing upon this question, the following may be quoted:

> In many instances during the Manchurian epidemic the patient with pneumonic plague must have swallowed enormous numbers of plague bacilli in the saliva and sputum. Nevertheless, in none of the necropsies performed during the epidemic were evidences of primary intestinal infection present, nor was serious involvement of the intestine encountered. This fact certainly strongly speaks against the evidence of primary intestinal plague in man, and would seem to show that even if the intestines are sometimes secondarily involved this condition in human beings must be also a very rare one (Strong and Teague).

Moreover, referring to the disease in camels mentioned above, Mr. Shuropof, a veterinary surgeon, who investigated the possibility of this animal suffering from plague, concluded that the camel was entirely insusceptible to the disease. He thinks that the observations made in the Kirghiz Steppes must be received with doubt, and that possibly the organism isolated from the dead camel was the Bacillus bipolaris plurisepticus, and not the plague bacillus.[6] The only definite proof that tarbagans in nature are affected with plague is obtained from the animal caught by Issaief in June at Scharasone, and examined by Zabolotny.

To conclude that a man whose occupation is that of a tarbagan hunter, and who takes plague, has been infected from a tarbagan is comparable to concluding that a man who sells rice and who develops plague has been infected from the rice. In the latter case it is possible that the rice, through the rat flea, was the source of infection; but if, without some proof that this were so, the statement was made, such a conclusion would be at once condemned as unjustifiable. From the above it seems to me a pity that responsible authorities and medical men should be so obsessed with the unestablished idea of the great infectivity of the tarbagan as to place hindrance in the way of transporting by rail live healthy tarbagans for important scientific research at our headquarters laboratory at Harbin, an experience which I had in March of this year.

*Conclusions.*

1. Even though the tarbagan occasionally suffers from plague, the epizootic is never extensive, and the animal does not play nearly so important a rôle in the spread of plague as does the rat. Indeed, its direct relationship to human plague may be considered negligible. Moreover, the mode of living and habits of the tarbagan are very different from those of the rat; for example, while the rat is a more or less domestic creature in close contact with man, the tarbagan is the reverse.

2. From the writings of Russian authorities it appears that plague has existed for many years in various parts of Siberia, sometimes in the bubonic form, sometimes in the pneumonic form. These places may be looked upon as endemic foci. In 1910 it is believed that pneumonic plague appeared in the Russian Ural district long before it made its appearance at Manchouli, and developed into that great Manchurian epidemic. During the latter half of 1911 this form of plague was present in the Kirghiz Settlements. In these districts, from October, 1911, to February, 1912, over 200 cases of plague occurred. Throughout Manchuria no case of plague in man or animals has occurred since the epidemic of plague pneumonia in 1911.

3. From this report it is obvious that statements of the occurrence of plague among men or animals should be believed only when they come from responsible sources—that is, after proper medical and scientific investigations.

## THE PRESENCE OF ACETONE BODIES IN THE URINE AND THEIR CLINICAL SIGNIFICANCE.

BY J. E. PIPER, M.B., B.S.

THE points of interest which it is intended to discuss in the present paper arose from work undertaken primarily with the view of establishing an accurate and reliable clinical method of estimating acetone in urine.

It was thought possible to develop the sodium nitroprusside reaction simultaneously in the urine to be investigated and in a watery solution of acetone of known concentration—i.e., 1 part per 1000—or a normal urine to which 1 part of acetone per 1000 had been added. The developing colours were then to be estimated in a Dubosque colorimeter, and if the urine under investigation gave twice the colour intensity of the 1 in 1000 solution, then its concentration would be 2 of acetone per 1000 parts. Preliminary experiments proved that the colour-developing was indeed proportional to the amount of acetone present, and that for two solutions of different strengths the proportionality in the colour concentration remained the same

[6] Vratch, No. 52, Dec. 31st, 1911, quoted in THE LANCET, March 9th, 1912, p. 688.

as the colour test proceeded to develop. For example, two solutions, A and B, were prepared.

Solution A consisted of 20 c.c. of 1/1000 acetone solution, 20 c.c. of $NH_3$, 1 c.c. of sodium nitroprusside (5 per cent.).
Solution B consisted of 20 c.c. of 1/2000 acetone solution, 20 c.c. of $NH_3$, 1 c.c. of sodium nitroprusside (5 per cent.).

The readings were taken at five-minutes intervals:—

| | | | | | |
|---|---|---|---|---|---|
| End of | 5 min. | A : B :: 10 : 20·2 | End of | 25 min. | A : B :: 10 : 20 |
| ,, | 10 ,, | A : B :: 10 : 20·3 | ,, | 30 ,, | A : B :: 10 : 20 |
| ,, | 15 ,, | A : B :: 10 : 19·3 | ,, | 35 ,, | A : B :: 10 : 20·4 |
| ,, | 20 ,, | A : B :: 10 : 20·3 | ,, | 40 ,, | A : B :: 10 : 20·4 |

In the case of the nitroprusside reaction for acetone the permanganate colour develops slowly and the colour deepens for about the first 15 minutes at ordinary room temperature. It was found that for two acetone solutions A and B, to which the colour reaction had been applied simultaneously, as shown above, if after five minutes the depth of colour produced in B proved twice as strong as that produced in A, then after 10 minutes and 15 minutes the same relation would still hold. But if one used greater variations in strength—e.g., one solution four times the strength of the other—the readings were not so accurate, nor did the ratio remain the same so long.

The idea of judging the amount of acetone from the intensity of the nitroprusside reaction must have suggested itself to many—e.g., Dr. E. Mellanby[1] and Dr. E. R. White.[2] An alternative method would be to dilute the urine 50, 100, 150 times, and so on, to find that dilution in which a reaction was just obtainable, and assume that the diluted urine then contained 1 in 10,000 parts of acetone, which is the smallest ratio in which acetone reacts. None of these methods, however, are applicable. Experience has shown that there is no such thing as a urine containing only acetone. All the urines examined when fresh contain 70 per cent. or more of the acetone as diacetic acid (acetoacetic being the chemical nomenclature).

In describing his modification of the nitroprusside reaction, Rothera considered that diacetic acid gave an orange-red colouration with that reagent. He obtained his diacetic acid from a specimen of the ester, which had been carefully prepared in the laboratory and had the correct boiling point; and it was thought unlikely at the time that there could be any impurity present, which would affect the reaction in great dilution. Experience with urines giving the ferric chloride reaction for diacetic acid showed that the nitroprusside reaction was, if anything, a bluer purple than the pure acetone reaction, and not redder as would have been expected had the diacetic reacted orange red.

Further, on using the colorimeter method for estimating acetone in a natural acetonuria results were obtained which were many times higher than those given by the Folin method.[3] For example, a urine obtained from the Children's Hospital gave only 2 parts per 1000 of acetone by the Folin method, but gave 30 parts per 1000 by the nitroprusside method. It was evident then that some other body than acetone was present in these urines, even though no diacetic acid could be found by the ferric chloride test.

The first possibility, and the most probable one, was the presence of diacetic acid. The laboratory stock of diacetic ester was consequently submitted to purification through the bisulphite compound and on recovery was used to prepare diacetic acid, which is itself very unstable and cannot be kept. The acid prepared from the purified diacetic ester now gave the blue permanganate colour with nitroprusside so typical of the naturally occurring acetonuria. This preparation of diacetic acid also gave the typical colouration with ferric perchloride, but on dilution a marked reaction was still given by the nitroprusside after the ferric perchloride had ceased to react. Further, a sample of urine, which gave on distillation 2·6 grm. of diacetic acid, estimated as acetone, did not react at all with ferric perchloride, showing that the latter reagent is far less delicate than the nitroprusside.

There is every reason to believe, then, that most acetone urines are really diacetic urines, in which a small proportion of the diacetic acid has broken down to form acetone.

Experiments have been carried out for the purpose of estimating approximately the order of delicacy of the nitroprusside reaction with diacetic acid. The amount of acetone present is first estimated by the Folin[4] method. Next the urine is distilled with acid and the diacetic acid reckoned in terms of acetone (Messinger-Huppert). Then the urine is diluted until the reaction with nitroprusside is just visible.

*Experiment 1.*—With urine collected the same day as examined. The urine gave faint reaction with a dilution of 1 in 100. 15 c.c. of the urine on distillation gave 0·66 grm. per litre of acetone. Therefore, a visible though faint reaction was obtainable with 1 part in 133,000.

*Experiment 2.*—Dilution of 1 in 250 gave faint reaction. The Messinger-Huppert method gave 1·65 grm. per litre of diacetic acid estimated as acetone. Therefore, a faint reaction obtained with a dilution of 1 in 130,000.

*Experiment 3.*—Dilution of 1 in 150 gave faint reaction. The Messinger-Huppert method gave 1·5 grm. per litre of diacetic acid estimated as acetone. Therefore a faint reaction was obtained with a dilution of 1 in 100,000.

Other experiments also served to prove that a reliable reaction can be expected with a dilution of 1 in 100,000, and this might be taken as a limit for working purposes. So that in a fresh urine (which nearly always contains at least 80 per cent. of the acetone bodies present as diacetic acid) this body can be estimated quantitatively by a process of dilution.

Two interesting papers have recently appeared showing the great frequency of acetonuria in children. One was written by Dr. White[5] and the other by Dr. Robert Frew.[6] All the children's urines examined by me have been typical diacetic urines with only small amounts of acetone. Therefore they are of the same type as the urines, quoted by Otto Folin,[7] which were obtained from diabetic patients, and post-anæsthetic urines have given similar results. Needless to say, it is of the utmost importance to examine all such urines fresh, as the diacetic acid rapidly breaks down into acetone.

Most of the work I have done in investigating acetone bodies has been directed to the estimation of the response of the human being to anæsthetics. In this list of anæsthetic cases there are not any emergencies; all the cases on which observations have been made were in the wards three or four days before operation and had a thorough and careful preparation. All Catholics had their last meal at 11.30 P.M. on the previous evening and all Protestants at 3.30 A.M. on the morning of the operation. All operations were done in the mornings. All anæsthetics were given by the open ether method, preceded by induction with ethyl chloride. All patients had morphia gr. 1/8 and atropine gr. 1/150 hypodermically one hour before operation. So that in making comparisons of the responses of different individuals to anæsthesia by ether there was very little chance of error either from the preparation or from the operation.

Eighty specimens of post-operative diaceturia were examined by the Folin method for the estimation of acetone and by the Messinger-Huppert method for the estimation of total acetone bodies. Cases were examined previously to operation for acetone bodies and any patients with acetone bodies in the urine were disregarded, or else an estimation of the urine was made both before and after operation. The original idea was to find if there was any diagnostic value in the proportion of acetone bodies present as acetone. As already indicated, the greater proportion of the reaction to nitroprusside in Rothera's method is due to the diacetic acid present, and the larger portion of the acetone bodies in the average urine is in the form of diacetic acid.

At this point two observations by Folin are worthy of attention.[8] First he claims that a large amount of acetone can be present without giving the acetone reaction, but he must be referring to the original method of using nitroprusside, for the Rothera method will react with a dilution of 1 in 10,000. Next he claims that von Jaksch, in 1883, did not prove that diacetic acid was present in diabetic urines, and since that time no one has ever proved that diacetic acid is present, but at the same time he himself has no doubt that it is there.

Rothera and I prepared diacetic acid from the ester, and this preparation gave exactly the same reaction to nitroprusside that the diabetic urine did which contained (or was thought to contain) diacetic acid, and our diabetic urine contained

[1] THE LANCET, July 1st, 1911.
[2] Australian Medical Journal, vol. xvii., 10.
[3] Folin: Journal of Biological Chemistry, vol. iii., p. 177.
[4] Folin: Loc. cit.
[5] Australian Medical Journal, Oct. 20th, 1910.
[6] THE LANCET, Nov. 4th, 1911.
[7] Journal of Biological Chemistry, vol. iii., p. 177.
[8] Journal of the American Medical Association, 1907

no oxybutyric acid which Folin maintains was the chief reacting agent in von Jaksch's experiments. This is not a rigid proof that the reacting substance is diacetic acid, but it is a strong one. Again, all previous experimental works and the conclusions published therefrom have been based on the amount of acetone present in the urine. My own experiments seem to prove that the amount of acetone does not vary a great deal, a very large percentage of cases containing between 0·3 and 0·35 grm. per litre, while the total amount of acetone bodies ranged from about 0·45 to 3·36 grm. per litre. Of course, some urines contained as little as 0·1 grm. per litre of acetone, and 0·28 grm. of acetone bodies, but such cases were exceptions and were not typical.

The persistency with which the total amount of acetone ranged between 0·3 and 0·35 grm. per litre gave the impression that any amount above that is excreted by the lungs, &c. When the total amount of acetone bodies was low the percentage of these bodies present as acetone was usually high (60–80 per cent.); when the total amount of acetone bodies was high the percentage of acetone present was low (20–30 per cent.). Two cases had 0·64 grm. of acetone per litre, but these were very atypical.

The kind of operation was found to have no noticeable effect, all the operations being pelvic ones. Removal of ovaries or absence of ovarian tissue previous to operation did not seem to affect the output of acetone bodies. Carcinomatous cases varied, and the data are hardly sufficient to enable deductions to be made.

The presence or absence of albumin did not seem to affect the results. The length of the operation did not seem to make any difference, the greatest amount of acetone bodies being obtained from a patient who was simply curetted, an operation involving 20 minutes' anæsthesia, and the second highest after an operation of 20 minutes, thus confirming the results published by Wallace and Gillespie.[9] Beesby[10] claims that there is no relation between delayed acetone excretion, duration of operation, and amount of anæsthetic used, which is a corollary to the lack of relation between the production of acetone bodies and the length of operation. Beesby states also that ether usually produces a greater amount of acetone bodies than chloroform (or rather he means that a greater amount of these bodies is excreted in the 24 hours following the operation), but that chloroform poisons the excretory cells of the kidneys and delays the excretion of acetone.

I have had only six cases with chloroform, and have found that the average total amount of acetone bodies excreted in the succeeding 24 hours is less than the average total amount after ether. Also, I have found that the acetone reaction remains in the urine for a longer time after operating and can also verify his statement that the elimination of acetone bodies is expedited by free purgation.

Again, the total amount of urine passed in the 24 hours does not bear any relation to the amount of acetone bodies present, for the patient who passed the largest amount (38 oz.) had 1·45 grm. per litre, and the patient who passed the least (7·5 oz.) had 1·33 grm. per litre, and patients who had no acetone bodies present after operation, as the result of treatment with pancreatin, ranged from 8 to 21 oz.

In estimating the amount of urine one must watch the class of case, for large tumours may press upon the ureters causing hydronephrosis. One such patient passed 22 oz. four hours after operation, and she was carefully catheterised immediately before being anæsthetised. The degree of fatness does not bear any relation to the amount of acetone bodies present, but there is a definite tendency for young women to have greater amounts than older ones. The highest amounts occurred in fairly thin women between the ages of 20 and 30, but I think the age the more important factor.

Contrary to all records of similar investigations I found septic cases produced smaller amounts of acetone bodies than non-septic cases, if one excludes acute septic cases such as acute appendicitis and acute pyosalpinx, which usually have acetone bodies before operation.

Again, patients who had gone longest without food produced the greatest amount of acetone bodies if all other things were equal. This I proved by putting cases operated on twice first on the list on one day, and last on the list on another day, and *vice versâ*. Further, cases were taken in which the patients were given absolutely new and uncontaminated ether, and compared with cases who were given ether which had been exposed to the air for some days and made impure by the addition of a little water, the anæsthetic being given by the same anæsthetist. It was found that there was a proportionately greater increase in the amount of acetone bodies after the contaminated ether. No attempt was made to try such experiments with chloroform, but one may be excused for thinking that anything which would increase the toxicity of chloroform would make such investigations inhuman and dangerous to life. But the observations on ether lend some support to the statement that deaths under chloroform in the South African war were due to the impurity of the drug.

But there were cases in which the large amount of acetone bodies present could be attributed neither to the anæsthetic nor to the previous starvation. In these cases there was one factor present which could not be estimated in figures, and that was the mental anxiety of the patient. One patient who had 3·36 grm. per litre, the largest on my list, was an exceedingly nervous neurasthenic individual. She had 20 minutes' anæsthesia only. Her actual figures were—acetone, 0·54 grm. per litre; total acetone bodies, 3·36 grm. per litre; percentage of acetone bodies present as acetone, 16 per cent. Another patient of the same type had the following figures: total acetone bodies, 2·16 grm. per litre; acetone, 0·55 grm. per litre; and percentage of acetone, 24 per cent. The second highest case on my list had chloroform for 20 minutes, and there was nothing except her mental state to account for her figures, which were: total acetone bodies, 2·61 grm. per litre; acetone present, 0·64 grm. per litre; and percentage of acetone, 24·5 per cent.

This proof of mental influence is of the greatest importance when we remember that diabetes occurs so commonly in neurotic individuals and has been known to follow severe shock, whether reaching the vital parts in the medulla from the peripheral, sensory, or sympathetic nerves, or descending to them through the organs of special sense.

These examples of mental shock are closely allied to the following examples of physical shock. The following is an extract from Burrage's "Gynæcological Diagnosis": "Baumgarten and Poffer[11] claim that acetonuria is present in every case of extra-uterine pregnancy. They examined the urine of 100 patients and were able, by detecting acetonuria, to distinguish between extra-uterine pregnancy and other uterine tumours." The above has not proved correct in my wards, but it opens up in my mind important work. In my wards recently was a true tubal pregnancy, with the fœtus *in situ* and the amnion unruptured, and although this patient was anæsthetised and the urine examined on two separate occasions, no trace of a reaction was obtained by the nitroprusside reaction. Again, another patient with acute double pyosalpinx had on estimation—total acetone bodies, 1·11 grm. per litre; acetone, 0·33 grm. per litre; equals 29 per cent. as acetone. In every other case of ectopic gestation except the one mentioned above (which was unruptured) acetone bodies were found and one such case had marked glycosuria as well as acetonuria.

The readings on estimation were, total acetone bodies 0·39 grm. per litre, acetone 0·1 grm. per litre, percentage of acetone 25·6 per cent. Specific gravity of urine 1040. The patient was losing per vaginam and gave a history suspicious of ectopic gestation; but on examination under an anæsthetic in the operating room the surgeons could detect nothing and simply curetted the patient. She was given 25 grains of pancreatin before and again after the operation. The day after the operation she had no sugar and her acetone estimation was—total acetone bodies 0·21 grm. per litre, acetone 0·09 grm. per litre, equals percentage 43.

Two days later she had another acute attack of pain in the lower abdomen, and examination six hours later showed a return of glycosuria with a specific gravity of 1030 and a fair amount of acetone bodies—equal 0·4 grm. per litre.

Next day she was easier and her urine had a specific gravity of 1025 with no sugar but acetone and diacetic acid. Two days later her urine showed 1025 specific gravity and contained as total acetone bodies 0·41 grm. per litre and no sugar. Next day on account of her blanched appearance and the persistence of the diaceturia I had her brought to the operating table as an ectopic, and laparotomy proved the diagnosis to be right. Next day her urine contained total acetone bodies 1·45 grm. per litre, acetone alone 0·34 grm. per litre, equal to 23 per cent.

In this second operation she had no pancreatin and the difference in the production of acetone bodies is noteworthy. This last estimation shows as an example that patients who already have acetonuria excrete a large amount of acetone bodies after operation, but not excessively large—an observation made previously by Beesby in regard to acetonuria,

[9] THE LANCET, Dec. 5th, 1908.
[10] Brit. Med. Jour., May 13th, 1906.
[11] Wiener Klinische Wochenschrift, 1906, No. 12.

although, as has been already stated, no great importance can be attached to the estimation of acetone alone.

After this digression we will go back to the statement from Burrage, which we claimed opened up a field of important work. It seems to me, both from my own observations and from the current literature on acetonuria, that all acute localised pains in the abdomen produced diaceturia. I say localised, because I wish to exclude generalised peritonitis or peritonitis on any large scale, which from the few observations I have been able to make does not produce diaceturia in the majority of cases. Different writers, particularly White [12] and Beesby, have drawn attention to the great prevalence of diaceturia in acute appendicitis. Beesby goes further and says that such cases should always be examined for acetonuria before operation, and suitable prophylactic treatment administered, and in such cases chloroform should not be used. Every now and again one reads in the current literature an account of a case of acidosis following operation. If Beesby's advice was followed such cases would be exceedingly rare, and many lives saved.

I have made a few experiments with closed ether. Ludd and Osgood [13] stated that with ether given in a cone 88·5 per cent. of their patients had acetonuria, while with open ether 26 per cent. only had the same condition. Young and Williams [14] gave the following figures: "Closed ether, 75 per cent., open ether 48 per cent."

When we consider these results in the light of Folin's statement that the qualitative chemical tests for acetone as usually carried out are pure fiction, and that he has never yet seen a diabetic urine the acetone concentration of which was sufficient to give a positive result with the nitroprusside reaction—i.e., Legals, &c.—we have to recognise the fact that the Rothera test for acetone and diacetic acid is immensely superior to any other in existence. I have got a reaction for diacetic acid by the Rothera method in diabetic urine when I had a dilution of 1 in 130,000 estimated by the Messinger-Huppert method, and post-operative diaceturia has occurred in 98 per cent. of the cases in which open ether has been administered in this hospital.

While referring to diabetes, I may give the history of an interesting case which portrayed most of the phenomena peculiar to stimulation of the splanchnic nerves.

A healthy woman, aged 29, and in her first pregnancy, began to lose weight rapidly in her seventh month. She lost about 2 st. in weight, and consulted a friend of mine when five weeks off her full time. He found sugar in her urine and treated her as a diabetic, but she still continued to lose ground. He brought me a specimen of urine two weeks later. I examined the urine and found 0·9 per cent. of sugar present; specific gravity 1025; total quantity for 24 hours 80 oz.; total acetone bodies 0·39 grm. per litre. I advised the induction of labour, but as the patient was only three weeks off her time, my friend decided to let nature take her course. So then at my suggestion he put the patient on pancreatin, gr. x. t.d.s. Three days later natural labour took place, and a specimen of urine four days later showed specific gravity 1022, no sugar, and no acetone, but what was particularly noticeable in the urine was a very sweet fruity odour, commonly thought to be due to the acetone.

Folin denies that this sweetish odour is due to acetone but does not know the cause, but he is the only one who does deny it to my knowledge. At any rate, it was most marked in the urine above, and there was certainly no acetone present nor any sugar. This woman made splendid progress and rapidly regained her normal weight.

Folin also claims that the characteristic fruity odour of the breath of diabetics has nothing to do with the traces of acetone which the respired air contains, but is really due to a whiff of stomach contents. Folin further states "that the toxic effects of acetone are negligible." Wallace and Gillespie claim that secondary vomiting is in direct relation to the amount of acetone produced (which I think is quite incorrect). Beesby says that ether and chloroform invariably produce a temporary acute acetonuria which may be very detrimental even to a healthy organism, and that this acute acetonuria is accompanied by symptoms of acid intoxication, sometimes ending in death, when the kidneys are unable to cope with the increased formation of acetone by a corresponding capability of excretion. Hubbard [15] says that the presence of acetone without symptoms has no effect upon operative treatment or prognosis. Here is a conflict of evidence and ideas which makes one hesitate before committing oneself to any statement.

[12] Australian Medical Journal, Oct. 20th, 1910.
[13] Annals of Surgery, September, 1907.
[14] Boston Medical and Surgical Journal, January, 1908.
[15] Boston Medical and Surgical Journal, June, 1905.

I must say that when I found that one of my patients had a diaceturia of 3·6 grm. per litre, while the urine obtained from a case of diabetic coma contained only 2·6 grm. per litre, and my post-operative case passed more urine than the diabetic case, I hurried up to the ward expecting to find her greatly distressed. Instead of that she was remarkably comfortable and said that she felt splendid, and had never vomited since the operation. In each of the three highest diaceturias in my series no post-operative vomiting took place, nor did the patients show any distress, whereas in the worst case of post-anæsthetic vomiting only a very small amount of acetone bodies was present in her total of 12 oz. of urine for the 12 hours. These results are the more remarkable when we consider the universal treatment of acetonuria by soda bicarbonate, the splendid results obtained, and the catastrophes which have been averted by its use. After all, the use of a soda salt alone is a very crude and unsuitable application of the acidosis theory, as the salts of magnesium and calcium are very necessary for the maintenance of life.

But someone will ask, "Do you mean to say that these cases of restlessness and air hunger with acetonuria, in which death so often occurs unless suitable alkaline treatment is given, are mere flights of fancy?" Most decidedly no. But this brings forward another question. Practically all writers claim that septic cases are most liable to acetonuria (which statement I have with certain reservations denied), and that it is extremely dangerous to give anæsthetics in these cases because of the probability of delayed chloroform poisoning resulting, the condition being one of acute acidosis.

I have been struck from time to time with the clear colour of the urines containing a large amount of acetone bodies after operation, and the comparatively large deposit of urates in those containing a small amount of the above bodies. That acetone is not a solvent of urates I proved experimentally, but no definite relation could be found between the amounts of uric acid and acetone bodies excreted. It was considered that this observation was worth following up in view of the connexion of the liver with the metabolism of the acetone bodies on the one hand, and the synthesis and conversion of urea, and of uric acid on the other hand. Quantitative estimations of uric acid and acetone bodies in the 24 hours urine following operation were made in 18 cases, but allowed of no interesting generalisation. These results are given in the following table, the urine being the volume for 24 hours:—

| | Urine. | Acetone. | Uric acid. | | Urine. | Acetone. | Uric acid. |
|---|---|---|---|---|---|---|---|
| A | 498 c.c. | 0·747 | 0·113 | G | 450 c.c. | 0·535 | 0·031 |
| B* | 900 ,, | 0·279 | 0·036 | H | 640 ,, | 0·358 | 0·075 |
| C | 550 ,, | 0·280 | 0·049 | I | 640 ,, | 0·154 | 0·135 |
| D | 420 ,, | 0·187 | 0·084 | J | 360 ,, | 0·070 | 0·084 |
| E | 480 ,, | 0·158 | 0·163 | K | 440 ,, | 0·114 | 0·104 |
| F | 470 ,, | 0·418 | 0·077 | L | 500 ,, | 0·072 | 0·081 |

* Case B was a decapsulation of the kidney.

Some of the literature in regard to delayed chloroform poisoning is extraordinary. One writer found acetone present in 9 cases only out of the 135 after operation. Another writer examined the urines of all cases operated on in a large hospital during the course of three months and never found diacetic acid once. My own experience leads me to regard a case not having diacetic acid after an anæsthetic as being something exceptional.

A great deal of work has been done with the view of finding out the cause of this so-called delayed chloroform poisoning, but two factors have not had sufficient importance attached to them; one is the abundance of cases which have a very strong diaceturia before operation, the other is the degeneration of protoplasm occurring in septic cases.

Beesby drew attention to the danger of acute acetonuria in children before operation, but his article does not seem to have received the attention it deserved. The fact that these cases occur at long intervals makes people careless. Yet I think that in cases of acute pelvic pain and shock, the presence of acetone bodies ought to be looked for, a rough calculation of the amount present made and suitable treatment administered, more particularly when the patient is very young. I do not urge this solely to obviate the risk of delayed chloroform poisoning, but I think that in young patients prophylactic treatment would also diminish the unpleasant after-effects of the operation and anæsthetic, and give a more rapid convalescence.

I have already pointed out that my most severe cases of diaceturia showed no ill-effects whatever, and the patients were quite comfortable after the operation; but they were adults and, moreover, their eliminating functions were good. But I think that even in adults, in cases which have some abdominal distension and paralysis of bowel after operation, the presence of large doses of acetone and diacetic acid in the system will aggravate any toxic condition present.

In those cases in which the acetone bodies are readily excreted they appear to be comparatively harmless, but where excretion is at a minimum their presence is very undesirable.

Various authors have reported their own way of making a rough estimation of the amount of acetone bodies present. Many of these are useless, because the nitroprusside has been reacting with diacetic acid when they thought that it was reacting only with acetone. The ferric chloride reaction with diacetic acid is not delicate enough to enable one to make estimations by its use.

During the last 12 months I have examined considerably over 1000 urines, I have prepared known and unknown dilutions of acetone in water and in urine and estimated them by the Dubosque colorimeter, and have estimated a large number (both post-anæsthetic and in infants' diseases) by the Folin and Messinger-Huppert method. Of course, I can tell when a reaction is very strong or very slight, but to make anything approximating to a rough estimation without accurately diluting the urine I regard as impossible. In the urine are two substances reacting to nitroprusside, one of which will react with a dilution of 1 in 10,000, the other with a dilution of 1 in 120,000. When there is a relatively large proportion of acetone to diacetic acid present, the tendency is, of course, to form too low an estimate of the total amount of acetone bodies present; when the proportion of acetone to diacetic acid is low the tendency is to form too high an estimation of the total amount of acetone bodies. Again, when the total amount is greater than about 0·75 grm. per litre the colouration is too intense to make comparisons.

Guthrie regards superabundance of fat as the great danger present. Anæsthetics are solvents of fat, and the breaking down of such dissolved fats into fatty acids is therefore regarded as the causation of the acetonuria and delayed chloroform poisoning. My own experiments prove to me that fat persons do not excrete a greater amount of acetone bodies after operation than do thin ones. Further, by giving a sufficient dose of pancreatin before and after operation I was able to prevent the occurrence of any acetonuria, which seems to me to strongly urge the claims of recognition of another factor in the production of diaceturia.

A great many writers lay particular stress on the frequency with which delayed chloroform poisoning occurs in rickety children, and in septic cases, by which they probably mean cases which have been running a high temperature for some time. But one must remember that in such cases we have almost certainly fatty degeneration of the myocardium and of the liver before operation. Then, when chloroform is given as the anæsthetic, this degeneration is greatly increased, thus enabling even a feebly toxic substance to exercise a very baneful influence. Guthrie lays great stress on the presence of a previously fatty liver, and maintains that the anæsthetic is the last straw. In this respect I think he is right, but he errs in thinking that this fatty liver is so prone to the production of acetone bodies. In a series of 200 post-anæsthetic urines which I have examined qualitatively, there were only three cases in which no acetone bodies appeared after operation—i.e., omitting the cases which had pancreatin—and one of these patients vomited from dynamic paralysis of the bowel until her death six days later. At no time did she have acetone bodies in her urine, but post mortem she had a markedly firm, fatty and enlarged liver, with fibrotic kidneys.

Again, acetonuria is very common in healthy children, and uncommon in middle-aged and elderly individuals in whom degenerate livers are so common. In the medical wards of the Melbourne Hospital I found diaceturia a remarkable rarity amongst cases of uræmia, cirrhotic livers, and individuals suffering from the toxæmias of rheumatism and gout. Furthermore, in the Women's Hospital I have found acetonuria no more common among eclamptic women than among uncomplicated full-time pregnancies (and I have also found that diaceturia and epigastric pain coexist in eclamptics), which piece of work brings us to the subject of pernicious vomiting.

In my wards I have found that an attack of pain in the pelvis or abdomen, such as a mild attack of appendicitis or salpingitis, will produce diaceturia. If the attack passes away the diacetic acid will be eliminated in a few days and will disappear at once if pancreatin be administered. If the pain persists, or reappears at short intervals, the diaceturia will persist in spite of the pancreatin, although it will be greatly lessened thereby. If the pain becomes more acute the patient will commence to vomit. Now this is the stage at which error is most often made. The urine of the patient is now examined, and the examiner will say that either the vomiting is due to the acetone or the acetone is due to the vomiting. I will quote one of my cases to refute these statements.

A girl came to the hospital complaining of dysmenorrhœa, but was otherwise quite healthy. Her urine before operation contained no acetone bodies. After operation her urine contained total acetone bodies, 1·75 grm. per litre; acetone present, 0·37 grm. per litre; percentage of acetone equals 21. By the third day the acetone reaction had disappeared from her urine, her temperature was rising, and she commenced vomiting. As a matter of fact, her pelvic peritoneum had become infected and she vomited until the day of her death—three days later. But never again did a trace of acetone appear in her urine and a catheter specimen a short while before her death failed to react.

The suggestion that the error in metabolism was occurring earlier and that oxybutyric acid was excreted instead of acetone is refuted by the fact that diacetic acid will react at a dilution of 1 in 120,000, and surely this percentage at least would be present if oxybutyric acid was formed. Another case is as follows:—

A very healthy-looking, plump girl was brought in complaining of continual vomiting. The honorary medical officer who saw her thought that the vomiting was of the *neurotic* type, and suggested the administration of bromides and other sedatives, which, however, were not given. I examined her urine and found a heavy percentage of acetone bodies present. I gave her pancreatin gr. x. four-hourly for five doses. Next morning she had very little acetone bodies, but the pain and vomiting recurred and consequently the diaceturia. Operation three days later showed an appendix bound down by adhesions, and the patient vomited only once after the operation and made a splendid recovery. The vomiting has never returned.

In treating the patients at the Women's Hospital I have followed out the two common methods of treating diaceturia as well as one of my own. Wallace and Gillespie recommend giving half a drachm of glucose every four hours before operation for six days. They treated a series of cases: one class were given nothing, a second class were given 30-grain doses of sodium bicarbonate every four hours until they had had half an ounce, and a third class were treated by their glucose method. They then publish results in favour of their glucose method, but their figures are very open to question. In their first class 25·2 per cent. had acetonuria before operation, in their second class 25·4 per cent., and in their third class only 3 per cent. had acetonuria before operation. This inequality of pre-anæsthetic acetonuria would totally distort all subsequent comparisons.

In my series of cases I treated only patients who had no acetonuria before operation when comparing the three methods—viz., treatment by sodium bicarbonate, by glucose, and by pancreatin—and I found that sodium bicarbonate had little or no effect, that glucose had an appreciable effect, but was simply dwarfed out of existence by the pancreatin. I used to give 25 grains of pancreatin one hour before operating, and 25 grains again as soon as possible after the operation, and in only one case out of a large number did I find any acetone present, and then only a trace. It is quite possible that this patient did not get all the pancreatin I ordered. In cases of pre-anæsthetic acetonuria, measured quantitatively, I found the amount diminished after operation under this treatment. I tested the pancreatin in all cases and found that it digested starch, although in some cases the process was slow. Cammidge and other writers have drawn attention to the fact that a large number of the pancreatins on the market are inert substances.

The question next arises, How did this pancreatin act? There was no carbohydrate in the stomach or intestine for it to break down, as the patient had had the usual starvation preparation. To effect this strong and undoubted reaction it must be absorbed in the blood; but what does it do then?

Finally, I must express my deepest gratitude to Dr. Rothera, acting professor of physiology and biochemistry at the University of Melbourne, for his valuable suggestions and assistance on all occasions, and for the generous manner in which he placed his department at my disposal.

Melbourne.

# SEVENTEENTH INTERNATIONAL CONGRESS OF MEDICINE.

ON Tuesday, August 12th, a highly successful dinner was held at the Hotel Cecil by the Sections of Rhino-Laryngology and Otology, and was presided over by Sir StClair Thomson and Mr. Arthur H. Cheatle. The toast of "The King" having been proposed by Mr. Cheatle, "Otology and Laryngology" was proposed by Sir Thomas Barlow and Sir Rickman J. Godlee in felicitous speeches, and replied to by Comm. Professor Dr. G. Gradenigo and Dr. Luc. Sir StClair Thomson and Professor Urban Pritchard then proposed the health of "The Guests," and Professor F. H. Bosworth, Professor Dr. Gustav Alexander, Dr. Delsaux, Professor Dr. H. Mygind, Dr. Castex, Professor Gutzmann, Professor H. Burger, Dr. L. Polyák, Professor G. Ferreri, Professor I. Kubo, Professor S. von Stein, Dr. J. Cisneros, and Dr. F. Nager replied. The toast of "The Ladies" was proposed by Sir Felix Semon, K.C.V.O., and Mrs. Dundas Grant replied. The health of "The Presidents of the Sections" was proposed by Professor S. Neumann and Professor von Eicken, and in reply Mr. Cheatle and Sir StClair Thomson referred to the work of the secretaries in connexion with the scientific work of the sections and the ladies who had so successfully arranged the social programme. Mr. W. Douglas Harmer, in reply, expressed the pleasure of the English members in meeting so many distinguished foreign visitors and hearing of their work in the fields of rhino-laryngology and otology.

The Mayor and Corporation of Bath extended a very hearty welcome to about 200 members of the Congress and their ladies, who visited that city on August 13th on their invitation. A special train provided by the corporation conveyed the guests to Bath, and on their arrival they proceeded to the bathing establishment in motor cars. Bath doctors, acting as guides, conducted the party, in suitable groups, over the baths, and explained the methods of treatment. A luncheon followed at the Guildhall, presided over by the mayor, Mr. Councillor Cooke. Later the visitors were taken in motor cars to view the chief objects of interest in the city and the surrounding neighbourhood, and a reception was afterwards held at the Roman Promenade by the members of the local medical profession. A special train conveyed the guests back to London, and brought an interesting and instructive visit to a close.

The Tutmonda Esperanta Kuracista Asocio (Universal Esperanto Medical Association) held its preliminary meeting on Friday, August 8th, in the Geological Laboratory of the Royal School of Mines. Professor G. Jameson Johnston presided, and was supported by Dr. G. F. Johnston, the secretary of the association. The address of the President, On the Need for a Common Language for Mutual Understanding in Congresses and the Use of Esperanto in Medicine, was listened to with great interest, and short speeches were afterwards delivered by foreign members of the association in their native language. Among those who spoke were Dr. Nemser (Russia), Dr. Terricabras (Spain), Dr. Duigon (France), Dr. Rothschuh (Germany), and Dr. Tarnowski (Poland). On Monday, August 11th, the association again met, and several interesting papers were read in Esperanto. Dr. Rothschuh discussed the question of the relation between the general practitioner and the balneologist, and Mr. F. W. Alexander (London), who has been acquainted with Esperanto for a year only, ably described the use of electrolytic disinfecting fluid (electrolysed solution of magnesium chloride) in the borough of Poplar. Dr. Nemser, who read a highly technical paper on the alkalinity of the blood, also read the paper by Dr. Sidlovskij (Russia) in the unavoidable absence of the latter, giving the result of an inquiry concerning backward children in the Moscow schools. A communication on Sounding the Duodenum was also read by the President in the absence of Dr. Robin, of Warsaw. After the formal meeting many remained for general conversation on various topics, one of interest being the forthcoming annual congress of the Tutmonda Esperanta Kuracista Association, which will take place in connexion with the Ninth Universal Esperanto Congress at the University of Berne during the last week of August.—A successful reception was given to the Esperantist medical practitioners attending the Congress at the Esperanto Club, St. Bride's Institute, St. Bride's-lane, Ludgate Circus, when not only were there a number of Esperantist medical men present, but also many foreign non-Esperantist medical men who were attracted there by the utility of the Esperanto international language.

## THE SECTIONS.

### SECTION I.—ANATOMY AND EMBRYOLOGY.

FRIDAY, AUGUST 8TH.

*President*, Professor ARTHUR THOMSON (Oxford).

The discussion was devoted to

*The Early Stages of the Human Ovum*,

a subject around which many debates have taken place and, which will necessarily furnish material for argument and speculation until some day in the far distant future when the whole sequence of human development is made clear by the study of a series of actual specimens. At present our knowledge, though rapidly accumulating, is fragmentary: very large gaps exist in the story of the early stages of the human ovum. It is in the filling of these gaps that imagination plays its part and the possibilities for debate come in. Where human material is deficient it is possible to bridge the interval between one known stage to the next by taking stages from the well-studied development of some of the lower animals. The present debate showed that there was much difference of opinion as to what type should be taken for providing the absent stages of the story of man. The report was furnished by Professor A. C. F. D'ÉTERNOD (Geneva), and it represented a most exhaustive summing up of the researches of a man who has given daily thought to this question for a space of over 30 years, and the gleanings from the labours of every other worker in the same field. It was only a brief extract that Professor d'Éternod was able to give in the time at his disposal. The discussion was mainly evoked, as it is certain to be in this subject, over the filling in of the gaps in the known human stages.

Professor T. H. BRYCE (Glasgow) expressed a general agreement with the ideas of Professor d'Éternod, but he thought that too large an appeal had been made to the amphibian type of development in supplementing our knowledge of man. In many ways the sauropsidan phases appeared to Professor Bryce more satisfactory stages to draw upon.

Mr. J. W. JENKINSON (Oxford) agreed with Professor Bryce's criticism, and gave a clear exposition of the points in which he differed from the conclusions of the report.

Further material was produced by the PRESIDENT in the shape of an embryo of known history and in excellent histological condition. Reconstruction models were shown of the whole embryo and its envelopes, as well as more detailed portions of its structure, and a large series of very beautiful lantern slides of serial sections was demonstrated. The cavity of the ovum was rather less than 2 mm. in diameter and the embryonic rudiment was proportionately small, so that the completed study of this most recent specimen is certain to add to the knowledge of early human stages.

The independent papers were then read.

Professor C. F. W. McCLURE (Princeton, N.J., U.S.A.) demonstrated a large series of reconstruction models and lantern slides illustrating the

*Development of the Lymphatic System in Fishes.*

Embryos of two species of trout had been exhaustively studied both in an injected and uninjected condition, and very beautiful preparations had been made from them. The demonstration made particularly clear the facts that in these fish the lymphatic system took origin as tissue spaces which were entirely separate from vascular channels. These tissue spaces enlarged within the developing embryo and neighbouring spaces coalesced, till at length channels were formed. These channels made connexion with the vascular system at a later date, and then might be injected from the blood stream. The growth and coalescence and final opening of these tissue spaces were beautifully displayed in a series of reconstruction models.

Professor G. S. HUNTINGDON (New York) followed with a paper on

*The Genetic Relations of Lymphatic and Hæmal Vascular Channels in the Embryos of Amniotes.*

In serial sections the speaker showed the differences in the development of the lymphatic system that were displayed in various animal types. The reptile followed very much the lines which Professor McClure had made clear in the trout, for here tissue spaces independent of the hæmal vascular channels were the first origins of the system. In birds a curious difference was demonstrated, for blood cells were developed in the tissue spaces which were ultimately to form lymphatic channels, these blood cells being extruded from the channels when their secondary connexion with the blood stream was once established. In mammals a further variation was seen, for here it was clearly demonstrated that the first lymphatic spaces were formed in the neighbourhood of veins, and that, with the disappearance of the vein, the spaces coalesced and formed a replacing lymphatic channel.

Professor J. A. PIRES DE LIMA (Oporto) gave a paper,

*Sur Quelques Observations de Fistules Juxtauréthrales Congénitales.*

This was a description of three cases in which the terminal portion of the urethra was abnormal, possessing what was commonly called a double meatus. Other cases recorded in the literature were detailed and the various opinions of authors as to the formation of this anomaly were given.

Mr. JENKINSON then gave his paper upon

*The Effect of Centrifuging the Egg upon the Development of the Embryo in the Frog.*

From a mass of interesting details concerning the anomalies described it was possible to extract a generalisation which, put crudely, almost amounted to saying that by centrifuging the egg the egg contents became arranged in three zones—an upper lighter, a middle average, and a lower heavier zone. When the embryo developed from such an egg the head end which developed from the upper zone tended to be abnormal, the middle region which developed from the middle zone tended to be but little disordered, while the anal region from the lower zone again showed disturbances.

Dr. MARIE LOYEZ (Paris) then read a paper,

*Sur les Follicules Atrésiques et la Formation des Kystes dans l'Ovaire de la Femme.*

The work went to show that various types of these cysts existed. Four types were recognised as arising in connexion with degenerated follicles and many were best regarded as true neoplasms.

Professor WALDEYER (Berlin) commented upon the paper.

The meeting terminated in the demonstration by Professor J. T. WILSON (Sidney) of a most beautiful set of slides and drawings of a human embryo of nine somites which appeared to be in perfect histological condition.

### SATURDAY, AUGUST 9TH.

Professor G. CARL HUBER (Ann Arbor, U.S.A.) opened the discussion

*On the Morphology of the Sympathetic System*

by giving a brief abstract of his exhaustive report. Professor Huber discussed the evolution of the more modern ideas concerning the sympathetic nerves, detailed the actual anatomical distribution of the system, and dwelt at some length upon the microscopic features of the various types of ganglia. From a stage of apparent great complexity, however, the speaker evolved order and simplicity by showing that the underlying features were identical in all parts of a system, which morphologically was a unit and not a series of separated entities.

Professor A. M. PATERSON (Liverpool) dissented from this view of unity; he regarded the thoracico-lumbar portion of the sympathetic as a thing altogether apart from the rest of the system and from the central nervous system. This isolated series of ganglia he regarded as being a splanchnic nervous system destined for the unsegmented splanchnic area.

Dr. J. F. GASKELL (Cambridge) then made a most interesting addition to the discussion by reading a paper dealing with the adrenalin-containing chromaffin system, which he insisted must be regarded as an integral part of the sympathetic system. He showed how this chromaffin system was essential to the proper working of the vascular system, how it was developed in common with the sympathetic ganglia, and how in some forms (Hirudineæ) cells existed which were both nervous in function and contained adrenalin substances. Such cells might be considered as ancestors of both systems—the chromaffin system and the sympathetic nervous system; and such cells appeared hand in hand with the development of a contractile vascular system.

Professor J. T. WILSON (Sydney) and Professor C. W. ARIËNS KAPPERS (Amsterdam) also took part in the discussion.

Professor HUBER, in his reply, dwelt upon the highly suggestive character of Dr. Gaskell's communication, and in answer to questions proposed during the discussion expressed his impression that the nervus terminalis might belong to the sympathetic system; and also gave it as his belief that separation of the sympathetic and central nervous system was incorrect.

Dr. AUBREY MUSSEN (München) then gave his paper upon

*New Observations on the Pulvinar of Macacus Rhesus.*

The investigation had been carried out by means of Dr. Clarke's method, and the speaker demonstrated lantern slides of the very beautiful sections obtained in this way. The outcome of the investigation was a more perfect definition of the anatomical boundaries of the pulvinar and its separation from neighbouring nuclei.

An exhaustive paper upon the Mitochondria in Nerve Cells and the Method of their Colouration was given by Dr. SHIROKOGOROFF (Dorpat).

In the discussion which followed Professor KAPPERS gave a *résumé* of the most recent work upon Nissl bodies and similar granules.

Dr. ALBERT WILSON (London) gave a demonstration with the rather comprehensive title of the Development of the Brain and Eye. The demonstration was based on sections prepared from embryos of 38 days and 8 weeks respectively, and comparison was made in the case of the brain with sections of various specimens of post-natal brains.

Dr. W. H. F. ADDISON (Philadelphia) showed excellent slides of sections of developing Central Nuclei of the Cerebellum. The work was carried out on embryos of rats, and consisted of a careful tracing of the site and origin of the cell constituents of the nuclei.—Professor ARIËNS KAPPERS joined in the discussion, and helped to clear up several points in the morphology of these nuclei.

Professor ARTURO DONAGGIO (Modena) gave his paper on Les Systèmes du Réaseau Nervofibrillaire et des Nervofibrilles longues dans les Éléments Nervous des Vertébrés.—Professor WALDEYER discussed the paper.

### MONDAY, AUGUST 11TH.

*Discussion on the Morphology of the Shoulder Girdle.*

Professor R. ANTHONY (Paris) gave a *résumé* of his exhaustive paper on the Shoulder Girdle of Amphibia, Reptiles, Birds, and Mammals. He dwelt upon the innate difficulty of the question, the endless functional modification produced in different types, and the diversity of views held by those who had given most attention to the subject. Next the clavicle came in for discussion, and the different members of the section were either delighted or disturbed by the recorder's treatment of this bone. In brief, he regarded it as somewhat analogous to a sesamoid bone, which is developed in membrane more or less in response to stress and strain, and which replaces stage by

stage the older precoracoid element of the girdle. The primative girdle he regarded as having a dorsal cartilaginous element (the scapula) and a ventral cartilaginous element. The dorsal element remained undivided, but the ventral element became subdivided into an anterior (precoracoid) part and a posterior (coracoid) part. Moreover, Professor Anthony showed a particularly attractive point in the relation of the deficiency of the limb articular socket to the division between the two divisions of the ventral portion, and demonstrated that this relation held good in the pelvic girdle. In the pelvic girdle he recognised the precoracoid in the pubis and the coracoid in the ischium. Special stress was laid upon conditions (illustrated in reptiles) in which a "fenestrated" coracoid simulated the presence of precoracoid and coracoid, and the true condition of these cases was clearly demonstrated. The modifications produced by ventral union were then discussed.

It was around the real significance of the clavicle that the bulk of the subsequent discussion centred, for Professor T. H. BRYCE (Glasgow) and Professor G. D. THANE (London) were not so ready to cast aside the clavicle as a mere sesamoid bone or as a product of friction or stress; and the presence of cartilarge in the early clavicle and its exact significance furnished material for discussion.

Professor F. G. PARSONS (London) also, by demonstrating the "looking glass" resemblance of the fore and hind limb, appeared to reject the conclusions of Professor Anthony as to the representations in the pelvic girdle of the elements in the shoulder girdle.

Dr. H. RABL (Innsbruck) gave a demonstration of the

*Development and Anatomical Condition of the Hæmolymph Glands.*

By means of blackboard drawings he made clear the vascular and lymphatic connexions of the glands, taking the developing glands in the embryonic porpoise to illustrate the subject.

Professor HUNTINGDON, in discussing the paper, alluded to the normal inclusion within embryonic lymphatics of blood-cells, and suggested that such glands might in a way be regarded as persistent fœtal characters.

The PRESIDENT read his paper on

*The Correlation of Isotherms with Variations in the Nasal Index.*

This was but an abstract of a contribution which must necessarily involve a wide resort to statistics, for the generalisation arrived at must be the outcome of very extended observations. In brief, the speaker, regarding the nasal chambers as being in part a mechanism for warming the inspired air, postulated that with a diminished temperature the nasal chambers would need greater development. As a consequence it would be expected that narrow nostrils and large noses would characterise dwellers in cold climates and wide nostrils and small noses those who lived in the tropics. Taking the Americas as a field for investigation, he showed that from the equator to both poles this expectation was fulfilled.

In the absence of Mr. D. E. DERRY (London) his paper on

*Some Physical Characters of a Prehistoric Sudanese Race*

was read by the Secretary, Dr. ALEX. MACPHAIL. The paper dealt with some skeletons unearthed at Gebel Moya during the archæological expedition organised by Mr. Henry S. Wellcome. The bones were those of a tall negroid race which showed affinities with modern Nilotic tribes and which removed the incisor teeth in conformity with the habit of wearing a rather massive lip ornament, such ornaments being found *in situ* in many instances.

The section then discussed the question of

*Late Prehistoric Man in Britain.*

Professor PARSONS described skulls belonging to Huxley's "River bed type," and contrasted them with those crania typical of the Bronze Age in Britain.

Professor W. WRIGHT (London) described the Bronze Age burials of the Yorkshire wolds, dwelling upon the variability of the type, and considering it probable that the race was already a mixed one when it moved from its continental site, which was probably situated somewhere around the shores of the Baltic.

Professor R. W. REID (Aberdeen) described the burials in the short cists which were found scattered about in the north-east of Scotland. Several skulls were exhibited, and the speaker described and illustrated the objects of culture found with them.

Professor BRYCE dealt with the burials found in the west of Scotland, and, disagreeing with Professor Wright, he imagined Central Europe to be the probable home of the race which passed into Scotland in late prehistoric times.

TUESDAY, AUGUST 12TH.

*Discussion on Cerebral Localisation and the Precise Significance of Sulci.*

Professor KAPPERS presented to the section a report which was a model of its kind—a dispassionate presentation of the views of all the workers in the field and a judicial weighing of these conclusions. This report is already printed in the transactions of the section, and it must remain for long the standard work of reference on this subject. Professor Kappers gave a *résumé* of his report in perfect English, and subsequently replied to each of his critics in the language addressed to him. The first point dealt with was the general meaning of fissuration of the brain, and the truth of the law of Baillarger, that fissuration of the surface increases with the growth of the volume of the brain, was illustrated in a large series of animals. Turning to the special meaning of individual sulci, the speaker remarked that one of the greatest workers had recently tended to discourage those employed in this study. Brodmann, whose work was classical, had laid it down that the study of sulci was a vain pursuit which led to nowhere; but Professor Kappers was more optimistic, and he considered that the value of the study was fully demonstrated in Brodmann's own publications. From a review of all the work accomplished so far it appeared certain that brain folding had a definite relation to intrinsic cortical structure. The thickness of the cortex, again, had a relation to the folding, as had also the disposition of underlying parts of the brain. For special illustrations Professor Kappers detailed the evolution of the sulcus centralis and the submergence of the insula region. In connexion with the sulcus centralis a point of paramount importance was mentioned. Brodmann determined that in a chimpanzee experimented on the motor area departed from the sulcus centralis in the lower part of its course; but the curious thing was that the fissuration in this region was variable in the chimpanzee, and in some specimens the sulcus centralis corresponded exactly to Brodmann's experimental area. This area was of a higher or more human type, and in this instance it seemed clear that the functional and histological differentiation and the cortex had become established first and that the actual disposition of the sulcus centralis was more slowly adapting itself to the new conditions. A great many more points of the utmost importance were discussed in this most interesting paper, and Professor Kappers made it amply clear that the study of fissuration was by no means a vain pursuit; indeed, in his hands it assumed a most profitable aspect, and impressed those present with its past achievements and future possibilities.

Professor G. ELLIOT SMITH (Manchester), in congratulating Professor Kappers, regretted the absence of any opposition, for the meeting was so fully in accord with the summing up of the report that the discussion would be limited to confirming and extending the views advanced. Professor Elliot Smith then amplified some of Professor Kappers's conclusions by a demonstration of the folding of the visual cortex of the occipital lobe, and dwelt upon the relation of the position of sulci to the actual limits of functional areas.

Professor ANTHONY, who followed, dwelt especially upon the region of the insula and expressed his agreement with the conclusions of Professor Kappers.

Professor FELIX MARCHAND (Leipzig) briefly expressed general agreement with the opinions of the previous speakers.

Professor KAPPERS, having replied, gave his second paper on

*The Phenomena of Neurobiotaxis in the Central Nervous System.*

This proved to be a contribution of exceptional interest and far-reaching suggestiveness. He alluded to the many inquiries that had been conducted into the growth of axis-cylinders of nerves, and contrasted this state of affairs with the poverty of observations on the growth and movements of the ganglia themselves. That the ganglia cells

do alter their position in the central nervous system Professor Kappers made abundantly clear. The nuclei of many cranial nerves were traced by means of a beautiful series of sections through several animal types, and the alteration in the position of the nuclei was noted. There was an order in all the readjustments of nuclei illustrated, a grouping of cells for functional purposes, a seeming attempt to approximate nuclei of different nerves in the most efficient functional combinations. The principle underlying all this Professor Kappers has named neurobiotaxis, or a displacement of nerve cells in the direction of the place of stimulation. The subject is a vast one, and, apart from its mere utility of explaining the curious intracranial course of some nerve roots, it involves a biological principle of the most wide-reaching kind. No contribution to this section during all its sessions suggests so much or helps so eminently in correlating function with structure. Reflection rather than discussion was provoked by such a paper, and the debate was limited to the suggestion made by Professor Elliot Smith that the development of interstitial tissue separating cells, rather than an active movement of cells, was the cause of the change of position of the nuclei.

Professor R. J. ANDERSON (Galway) gave his paper on

*The Skeletal Elements of the Extremities of Primates.*

The paper for the most part was concerned with a series of measurements of the different bony components of the limbs.

Dr. FERNAND VILLEMIN (Reims) contributed a paper on

*The Lower Limit of the Duodenum.*

This paper dealt with gross human anatomy and described an apparently overlooked structure in the much-studied human alimentary canal. Dr. Villemin urged that the lower termination of the duodenum was not at the duodeno-jejunal junction so-called, but at a point some inches nearer to the stomach. This point was marked in the adult by: (1) a mucus membrane valvule; (2) an extension into the valvule of a part of the circular muscular coat; (3) by the cessation of Brunner's glands; and (4) by the insertion of the muscle of Treitz. It was admitted that these features were not so distinct in the fœtus, nor in lower animals, but Dr. Villemin showed sections of the valvule, and considered that it constituted the true morphological limit of the duodenum.

The sessions of this section terminated with a graceful speech from the PRESIDENT, in which he bid adieu to the members, and thanked those who had contributed to the successful working of the meetings.

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## SECTION IV.—BACTERIOLOGY AND IMMUNITY.

### THURSDAY, AUGUST 7TH.

*President*, Professor G. SIMS WOODHEAD.

The opening session of the section was devoted to a discussion of

*Anaphylaxis*,

the reporters being Professor L. FRIEDBERGER (Berlin), Professor A. BESREDKA (Paris), and Professor CH. RICHET (Paris).

Professor FRIEDBERGER in introducing the subject gave a comprehensive summary of all the recent work upon

*Protein Anaphylaxis*,

and pointed out that the entire symptom complex was the only criterion of the existence of the condition. He compared it with other toxic conditions from which it differed only by reason of the fact that protein substance provoking anaphylaxis was in itself practically harmless, and only became toxic when introduced into a previously sensitised animal. He then discussed the formation of anaphylotoxin from the antigen-antibody-complement combination, and suggested that bacterial endotoxins might similarly be toxic reaction products.

Professor RICHET dealt with

*Alimentary Anaphylaxis*,

which he suggested was due to defective immunisation, and referred to the attempt of many observers to sensitise experimental animals by way of the alimentary tract. He explained that sometimes albumins escaped the action of the gastric juice and were absorbed in minimal doses, and subsequently mild anaphylaxis, evidenced by rashes of the urticarial type, was induced, and suggested that whenever a new albuminoid was added to the dietary it should be taken repeatedly in small quantities in order that the organism might become habituated.

Professor BESREDKA took

*Anti-Anaphylaxis*

for his text, and described the experimental methods that were successfully employed in preventing anaphylactic shock in animals. Arising from these experiments he explained the method of obviating anaphylaxis in the human subject hypersensitive to serum by the subcutaneous, intravenous, or intraspinal injection of a small dose of serum (from 0·5 c.c. to 2 c.c.) followed after an interval of from 10 minutes to several hours by the therapeutic dose it had been decided to employ. A translation of Professor Besredka's report was printed in THE LANCET of August 16th, p. 462.

Professor R. WEIL (Cornell University, U.S.A.) described his experiments on the cellular theory of anaphylaxis in which isolated organs from sensitised animals were washed with Ringer's solution and their movements recorded on a drum. He found that tetanic contractions were obtained when the antigen was employed, but that in the absence of antigen no differences could be demonstrated between the contractions produced by normal serum or by normal saline.

Dr. H. H. DALE (London) demonstrated a series of Tracings of the Movements of the Perfused Uterus (from a sensitised guinea-pig) which was suspended in Ringer's solution. At a given moment the reacting dose was added to the solution, and almost immediately a massive contraction was graphically recorded. He considered that the specificity of anaphylactic reaction was so delicate and distinct as to be highly suitable for medico-legal investigations.

Professor JULES BORDET (Brussels), whilst agreeing with Professor Friedberger that the anaphylatoxin obtained *in vitro* was identical with that observed *in vivo*, differed in his explanation of the origin of the poison, since he considered it to be derived, not from the antigen, but from the serum itself of the animal exhibiting the anaphylactic shock, and regarded anaphylaxis as the result of the absorption of certain substances of the serum derived perhaps from the antibody-antigen complex, perhaps from totally different substances—as, for example, agar.

Dr. F. H. THIELE (London) defended the ferment theory of anaphylactic conditions as against the cellular, and

Professor KRAUS (Vienna) insisted that the only method of arriving at a correct explanation of anaphylaxis was by purely physiological experiment.

Dr. H. DE WAELE (Paris) contended that the anaphylactic condition was entirely due to the increased coagulability of the blood.

Dr. FRIEDBERGER briefly replied and terminated the morning's proceedings.

On resuming work in the afternoon Dr. DE WAELE read a further communication upon anaphylaxis, expanding and illustrating the views to which he had given expression during the discussion in the morning.

Dr. THIELE repeated the observations on the toxicity and pathogenicity of bacteria, previously given in conjunction with Dr. D. Embleton (London) at the meeting of the British Medical Association at Brighton.[1]

Dr. I. M. ALBAHARY (Paris) read a paper upon the Tuberculous Toxin, and just before the section adjourned Dr. SOPHIE FUCHS VON WOLFRING (Paris) gave the results of her research on spirochætæ in human blood by Carl Spengler's staining method, in which she stated that Spengler's spirochætæ were always present in the blood of syphilitic patients and of those giving a positive Wassermann reaction.

### FRIDAY, AUGUST 8TH.

The morning session was occupied with a discussion upon cancer, in conjunction with Section IIIa., Chemical Pathology, under which section a report of the proceedings will be found in our last issue, p. 478.

In the afternoon Dr. C. G. GUTHRIE, Dr. W. L. MOSS, and Dr. J. SELIEN (Baltimore) reported their investigations upon

*Diphtheria Bacillus Carriers.*

These workers have continued their previous research with a view to determining the duration of persistence of diphtheria bacilli in the throats of carriers and to discovering whether the persisting bacilli may undergo a change in

[1] See THE LANCET, Jan. 25th, 1913, p. 234.

virulence during their growth in the throat. The results were remarkably constant and showed that if, from a given individual, the first culture was virulent, all the subsequent cultures were virulent, or if the first culture was avirulent all the subsequent cultures were also avirulent. Rare exceptions to this rule, where sometimes virulent and sometimes avirulent bacilli were recovered, were considered as probably due to successive infections with organisms possessing different degrees of virulence. No evidence was obtained that the same person ever harboured simultaneously virulent and avirulent organisms. Further, the introduction of pure cultures of avirulent B. diphtheriæ into the throats of a series of healthy persons caused infestation with these organisms for long periods; but no symptoms developed, and organisms recovered from them were never virulent. On a basis of 5000 cultures from 3300 persons not suffering from clinical diphtheria the authors concluded that the number of healthy carriers of B. diphtheriæ in Baltimore was very large (3·55 per cent.). Of these, only a tenth to a sixth harboured virulent organisms; this number was greatly in excess of the cases of clinical diphtheria. A striking fact was that no case of clinical diphtheria developed in the carriers or in any of their associates during the progress of the investigation.

Dr. THIELE and Dr. EMBLETON described the transformation of avirulent B. Hofmann (pseudodiphtheria) into virulent diphtheria by inoculating guinea-pigs intraperitoneally with a pure culture of pseudodiphtheria along with gelatin and then selecting the recovered organisms.

Dr. W. H. FEARIS (London) demonstrated an ingenious dark ground arrangement whereby the end point in precipitation reactions could be rapidly and accurately determined.

Dr. ARCHIBALD LEITCH (London) made a communication upon the

*Diminution of Resistance to Repeated Inoculation of Mouse Cancer.*

The view generally held that if a tumour graft failed to grow in an animal that animal was immune to subsequent inoculation was not universally true. A number of so-called "immune" mice were repeatedly inoculated with the same strain of tumour at intervals of over a month, and it was found that growth might ensue only after the fourth or fifth inoculation. Similar results were obtained with several different tumours. Thus the susceptibility to inoculation with tumour was a fluctuating quantity in any given animal.

Dr. ISAAC LEVIN (Columbia University) spoke upon

*The Mechanism of Immunity in Experimental Cancer.*

Immunity to tumour was not of the same nature as bacteria immunity, but was probably due to ferment action, since tumour immunity could be conferred by injections of autolysed tissue. The phenomenon of athrepsy was not caused solely by disturbance of food relationships. Experiments with a mouse sarcoma which had been transplanted into a rat showed that the rat's tissues had inhibited the activity of growth of the tumour when retransferred to mice. The organism of the host had a direct action on the tumour cells, and different organs might behave differently in this respect; thus the Flexner-Jobling rat sarcoma would not grow when implanted in the healthy testicle, but would grow if the testis had been previously injured with Scharlach R. Similarly, immunity was acquired by different organs in varying degree; thus after imperfect removal of a subcutaneous tumour graft it was found that subsequent inoculations made simultaneously in the liver and spleen were followed by growth only in the latter organ. Radioactive bodies might act by leading to the local development of growth-inhibiting substances.

Dr. D. JACOBSON (Paris) reported good results from the direct application of Marmorek's antituberculer serum to the local lesion—e.g., intravesical administration in tubercular cystitis.

SATURDAY, AUGUST 9TH.

Dr. W. BROUGHTON ALCOCK (Institut Pasteur) recorded results obtained by the use in 2000 cases of

*Sensitised Vaccines,*

as recommended by Besredka. A year's experience had shown that no ill effects followed the subcutaneous injection of living pyogenic cocci sensitised with immune serum. Comparatively little reaction followed the injections, the doses being usually given at intervals of three days. The immune sera were derived from rabbits, and were used in the unheated state after being kept for some weeks; they were tested beforehand by the complement-fixation reaction. In the case of staphylococcal infections autogenous vaccines were not always the most effective. The serum of patients vaccinated with dead staphylococci served well for the preparation of sensitised vaccines. In cases of acne which were not improved by dead vaccines good results followed the use of living sensitised organisms. Gonococcal epididymitis and arthritis responded well, also pyorrhœa alveolaris.

Dr. THIELE questioned the safety of sensitised vaccines if they obtained access to the blood stream, in view of his observations on anaphylactic phenomena when sensitised red blood corpuscles or bacteria were injected into guinea-pigs.

Dr. G. HOFERE (Vienna), working with the ozœna bacillus of Perez, found that this organism in culture produced the characteristic smell of ozœna. When injected intravenously into rabbits or applied locally in suitable doses the organism produced a condition closely resembling ozœna in the human subject. In typical ozœna cases the patients' sera agglutinated the bacillus of Perez in a dilution of 1 in 100, while the sera did not act on other organisms recovered from the nasal secretion in ozœna. The organism was cultivated from the nose in a number of cases, and vaccine treatment produced good results. One striking result of injections of the vaccine was the acute nasal catarrh which followed shortly after a dose, and persisted for 24 hours.

Dr. FENTON B. TURK (New York) described the

*Serum Changes and Lesions produced in Animals by Feeding with the Colon Bacillus.*

When animals were fed with virulent and very motile B. coli the bacilli passed through the mucous membrane into the lymph spaces of the intestinal wall and there underwent rapid bacteriolysis. The products in the circulation and by diffusion caused peptic ulcers of the stomach and duodenum. Intravenous injections into dogs produced lesions similar to those obtained by feeding.

Dr. N. F. SURVEYOR (Bombay) described

*A New Method for the Treatment of Bacterial Infections—a Modification of Vaccine Treatment,*

which consisted in making measured dilutions of pus from the patient with normal saline and then sterilising by heat. This "autoxin" might be administered by itself or it might be used for diluting a vaccine prepared in the ordinary way ("autoxin-vaccine"). The chief advantage claimed for this procedure was that bacterial constituents might thus be employed for immunising in the case of organisms which failed to grow in artificial media. Thus the autotoxin might be advantageously employed in cases of pyorrhœa alveolaris and mucous colitis, also in pyæmia. Dr. Surveyor drew attention to the fact that in treating pyogenic conditions with vaccines the pus should be examined periodically to determine whether or not an additional infection had become superadded.

MONDAY, AUGUST 11TH.

*Filter Passers.*

A discussion on this subject was opened by Professor F. LOEFFLER (Greifswald), who said that since he and Frosch showed in 1898 that the virus of foot and mouth disease passed through filters a large series of diseases had been attributed to "filter passers." Amongst these might be mentioned yellow fever, dengue, pappataci fever, poliomyelitis, and infective pleuro-pneumonia of cattle; recently it had been asserted that the infective agents of scarlet fever, measles, and typhus fever also belonged to this group. He pointed out that the capacity of a virus to pass through a filter told nothing of its nature except that it must be of minute size. The virus could be characterised only by its power to reproduce the disease on inoculation. Attempts to cultivate the filter passers in artificial media had in general been unsatisfactory; but success had been achieved in certain instances. Thus, the virus of infective pleuro-pneumonia was cultivated inside collodion sacs in the peritoneal cavity of rabbits, and Bordet obtained growths on blood agar. The parasite in this instance was relatively large and its filtrability was prevented if there was too great an amount of albumin in the fluid to be filtered. The fowl plague virus also grew in artificial media, as was proved by the fact that the minimal infecting dose was the same after repeated subculture as in the original culture (Marchoux, Landsteiner, and Berliner);

this parasite required intact blood corpuscles for its growth. But in other instances—e.g., foot and mouth disease—attempts at cultivation had failed. Immune sera could be obtained by inoculation with large amounts of cell-free infective material—e.g., cow-pox lymph. In conclusion, Professor Loeffler urged that in view of the great importance of filter passers in the etiology of disease laboratories should be devoted to the study in all countries.

Sir JOHN MCFADYEAN (London) said that the demonstration of invisible viruses marked a new epoch. The invisibility of a virus was of more interest than the fact that it was a filter passer. The term "filter passer" was not a precise one. Whether bacteria could pass through a filter or not depended on (*a*) the texture and thickness of the filter wall; (*b*) the pressure under which the filtration was carried out; (*c*) the duration of the filtration; (*d*) the composition of the liquid in which the bacteria were suspended; and (*e*) the form and dimensions of the bacteria. By way of control it was necessary to show that a small but visible organism in the fluid was held back by the filter while the virus passed through. In the case of human diseases it might be difficult to prove the presence of the virus unless a susceptible animal could be found. In regard to the reproduction of the natural disease by inoculation there were pitfalls. Thus, in the case of swine fever cultures of a bacillus, which was at one time thought to be the cause of the disease, produced the characteristic lesions on inoculation, but the experimental disease was not contagious. On the other hand, the inoculation of the filtered virus of infective pleuro-pneumonia practically never gave rise to the lung lesions characteristic of the natural disease, and the experimental disease was non-contagious; but the same held good of inoculation with the unfiltered infective material. It was a striking fact that the great majority of the filter passers had not been obtained in artificial culture. This might be due in some cases to their being of protozoal nature—e.g., the viruses which were transmitted by insects, such as yellow fever. Again, the occurrence in certain instances of infection by the mouth pointed to the bacterial nature of the parasite. The occurrence of saprophytic invisible filter passers had not yet been demonstrated, but this might be due to ignorance of the conditions necessary for growth. It was probable that great advances would be made in the cultivation of invisible organisms, and he agreed with Professor Loeffler that the study of this group should be subsidised.

Dr. W. FORNET (Berlin) reported that he had effected the pure culture of the vaccinia virus. The vaccine lymph was sterilised by the addition of ether, which had the advantage of killing off associated organisms and at the same time of not harming the specific agent; the ether could be readily removed by evaporation and its action thus stopped. The lymph which had been so treated remained active after incubation for months at 37° C., and was therefore suited for use in the tropics. Unlimited growth occurred in culture media without any visible alteration, and the infective dose after repeated subculture precluded the idea that proliferation of the virus had failed to take place. Certain microscopic appearances in the cultures after staining by Loeffler's method were described as characteristic.

Professor KRAUS (Vienna) described experiments with the filtrable virus of fowl plague. His work emphasised the importance of testing various species of animals and of the same species at different ages. Also differences in various strains of the same virus were brought out. A certain virus isolated from a case of fowl plague was found to be infective for both young and old geese when inoculated intramuscularly, whereas the "laboratory" strain of virus failed to infect old geese, which, however, succumbed to intracerebral infection. The serum of old geese vaccinated with the avirulent strain had a prophylactic action against inoculation with the virulent virus. No growth was obtained in artificial media.

Dr. LAMBERT, along with Dr. STEINHARDT (Columbia University), had cultivated with success the vaccinia virus in rabbit's cornea along with blood plasma *in vitro*. They employed vaccine lymph freed from glycerine by dialysis, and obtained a number of cultures without the presence of bacteria. The material used for cultivation was capable of producing only a small number of pustules on inoculation, but after growth for 18 days the culture gave rise to a confluent eruption. They concluded that multiplication of the virus had occurred along with the living growing corneal epithelium.

Professor G. SIMS WOODHEAD (Cambridge) had failed to obtain positive results on inoculation with filtered vaccine lymph.

Professor C. J. MARTIN (London) described experiments conducted by Dr. Todd, of Cairo, on the virus of rinderpest which showed that the causal agent of this disease did not pass through a Berkefeld filter. Starting with infective citrated blood which was active in a dose of 0·001 c.c., and subjecting this to centrifugalisation, the following results were obtained: the top layer was non-infective, the layer of red corpuscles contained the infective agent in only a hundredth of the concentration of the original whole blood, and the greatest part of the virus resided in the leucocyte layer. This appeared to suggest that the infective agent might be situated within cells.

Dr. ALAN B. GREEN (London) had compressed the contents of vaccinia exudates into citrate solution, and so obtained a clear fluid which could be readily filtered. Every filtrate failed to give positive results on inoculation.

Professor LOEFFLER, in concluding the discussion, said that in many cases there was a justifiable doubt as to the authentic character of alleged filter-passing viruses. Negative results had been obtained with trachoma. Prœscher, who had failed to pass the virus of rabies through filters, found that bacilli could be demonstrated in the infected tissues by means of an alkaline solution of methylene-agar. No generalisation of the facts of one disease could be applied to another.

Professor E. E. IRONS (Chicago) communicated his

*Studies in Gonococcal Immunity, with Special Reference to Diagnosis and Treatment.*

As regarded cutaneous reactions with extracts of gonococci there was no doubt that the reacting power of an infected person differed from that of a healthy individual, but suitable extracts must be employed. Complement-fixation experiment was the most satisfactory method of measuring the antibody content of patients' sera. Experiments had shown that the amount of antibody in the serum was liable to undergo marked fluctuations; frequently these occurred quite apart from any clinical explanation. The opsonic properties of the serum behaved similarly. The results of the cutaneous reaction and of complement fixation did not always run parallel. It was not possible, so far, to apply serological data to determine when cure had been effected, but positive reactions had considerable diagnostic importance.

Dr. W. J. PENFOLD (London) read a paper on

*The Inhibition of Bacterial Growth,*

in which he said that when culture medium was at first inoculated from a previous culture delay (or "lag") in growth usually occurred for a period. But there was no lag provided that the inoculation was made from a culture which was at the time growing with maximum rapidity. Brief chilling of such cultures did not produce lag when the temperature was again raised. Lag was diminished by a large inoculating dose, but it was not influenced by thermostable products of old cultures. At lower temperatures there was greater lag than at higher. The explanation adduced for lag was that the synthesis of bacterial protein occurred in stages, and that a certain concentration of products at intermediate stages was essential for growth. The period of lag and of maximal growth had been combined in one mathematical expression.

Professor FRIEDBERGER (Berlin) discussed

*Heterogenetic Antibodies,*

and stated that Forssman's observations upon the injection of guinea-pig's kidney into rabbits, causing the latter animals to develop in their blood serum a hæmolytic immune body for sheep's blood, had been confirmed. In addition, a number of original observations had been made which were of the highest importance as regards the theory of the origin of antibodies. It had been found that guinea-pig's urine acted similarly to kidney tissue, and the immunising constituent of the urine was soluble in alcohol. The immunising power of tissues or their products ran parallel with their toxic properties. Immunity to tissues of higher animals and to bacteria differed in one important respect—namely, that in the case of the latter the entire protein of a living entity

was used for immunising; whereas in the case of mammalian tissues, &c., only the protein of a single specialised tissue was injected.

TUESDAY, AUGUST 12TH.

Dr. C. W. DUVAL (New Orleans), who opened a discussion on

*Leprosy and Allied Conditions*,

considered that the various organisms which had hitherto been described as the causative agents of leprosy did not substantiate the claims made for them. Thus organisms which had grown readily on ordinary culture media soon after isolation, or which were chromogenic, were not the true B. lepræ. The bacilli of Kedrowsky and of Levy resembled most closely Müller's smegma bacillus. Non-acid-fast organisms (diphtheroids) and streptothrices were merely associated microbes. Specific serum reactions of complement fixation were not obtained with the acid-fast group, and there were no characteristic lesions distinguishing B. lepræ when inoculated into animals from acid-fast saprophytes; typical skin and nerve lesions would require to be produced. The true leprosy bacillus of Hansen probably required for its growth the split products of protein, and could not utilise whole protein, so that growth was obtained only when protein was hydrolysed or autolysed. When autolysis occurred in the tissue of a leprous nodule placed on culture medium, then the bacilli proliferated; but there had as yet been very little accommodation of this bacillus to the conditions of artificial culture media, so that after from eight to nine weeks' growth the culture was not more vigorous than that of B. influenzæ.

Major E. R. ROST, I.M.S., by means of medium containing agar, milk, and volatile products of fish, had obtained growths of a highly pleomorphous organism which grew well. Cold-blooded animals (frogs and mud fish) were more susceptible than warm-blooded ones, which suggested that the former might naturally harbour the disease. Cultures of diverse character appeared much more alike when recovered after inoculation into frogs. Naturally infection occurred probably by means of clothing through broken skin surfaces. Inoculation at the site of wounds had been seen in two cases. Vaccine treatment with a mixture of seven strains had been employed in about 30 instances, with very encouraging results. In severe tubercular cases a marked febrile reaction occurred; in anæsthetic cases there was merely slight flushing of the light patches. Leprotic fever did not contra-indicate treatment. Other streptothrix vaccines would produce similar reactions in large doses, but no improvement had followed their administration. In view of the pleomorphic character of the organism autogenous vaccines were to be recommended. As prophylactic measures segregation of cases and sterilisation of clothing should be practised.

Dr. H. FRASER and Dr. W. FLETCHER (Federated Malay States) had, over a period of 18 months, uniformly failed to obtain cultures of B. lepræ. Their method consisted in very carefully sterilising the skin surface with alcoholic iodine solution and then reflecting a flap and dissecting out nodules which were implanted on various media. The presence of typical bacilli was always determined by microscopic examination. The media employed were blood and serum media and the various media associated with the names of Rost (Williams's modification), Williams, Duval, Bayon, and others. Contaminating organisms such as diphtheroids, &c., grew well in the first subculture. The behaviour of organisms to weak acids, as tested by some workers, was regarded as a source of fallacy. The conversion of acid-fast into non-acid fast varieties recorded by certain observers had been due to an overgrowth by non-acid fast contaminating microbes.

Dr. P. G. E. BAYON (Robben Island) demonstrated a large variety of lesions due to leprosy and allied conditions. A number of cases occurred with nerve lesions, and these in their clinical course resembled leprosy, but no acid-fast organisms could be detected in them; inoculation into guinea-pigs afforded no evidence that these cases were due to tuberculosis. In his experience the organism grew only on media suited for the growth of the tubercle bacillus. Treatment with an extract of Kedrowsky's bacillus had given very favourable results, but in view of the nature of the disease it was unsafe to speak of cures.

Professor KRAUS and his co-workers had found that in the acid-fast group a specific reaction could be obtained analogous to the Pfeiffer phenomenon. Thus in an immune guinea-pig when injected intraperitoneally with a culture bacteriolysis occurred only when the homologous organism to that used for immunisation was injected. Kedrowsky's bacillus and Duval's (early) culture were proved to be different by this method, which should prove of value in determining the etiological relationships of the various bacilli of this class.

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SECTIONS VI. AND II.—JOINT SESSION OF THE SECTION OF MEDICINE WITH THE SECTION OF PHYSIOLOGY.

FRIDAY, AUGUST 8TH.

Professor Sir E. A. SCHÄFER (Edinburgh) first occupied the chair, and later Sir WILLIAM OSLER, Bart. (Oxford).

A discussion on

*The Correlation of the Organs of Internal Secretion and their Disturbances*

was opened by Professor E. GLEY (Paris), who gave a *résumé* of the various methods by which the existence of internal secretions could be ascertained and demonstrated, histological, physiological, and chemical. He pointed out that in spite of the vast amount of work on the subject which had been published in the last five-and-twenty years the quantity of our exact and certain knowledge was still disappointingly small. Too many hypotheses and theories had been formulated. Not only so, but certain discoveries, such as some of those made by Schäfer, had turned out to be positively harmful, by what he adroitly termed *un bonheur malheureux*, for they had misled subsequent workers. He pointed out that a fact of great importance is overlooked by too many of the experimenters who labour in this field of physiology. It is this: that one cannot take it as proved that the substance found in the extracts made from organs were actually present in those organs during life. These extracts were often highly toxic, he said; yet it must not be rashly assumed that the toxicity was due to specific substances secreted by the organ. The toxicity here might depend upon many conditions, and most of all upon the method by which the extract had been prepared. Among other topics he discussed the newly discovered property of tachyphylaxis, exhibited when, as sometimes happens, an animal's tissues acquire the property of resisting a second toxic injection within a few minutes or hours, while the first injection had found these tissues unprepared and open to attack. The reciprocal actions of the ductless glands were, of course, he admitted extremely complex and hard to disentangle; for solution of these problems he looked to laborious physiological and clinical work in the future.

Several succeeding speakers, among them Professor A. BIEDL (Vienna), Professor A. VON KORÁNYI (Budapest), and Professor F. KRAUS (Berlin), read papers dealing with generalities and matters of detail that do not lend themselves to compression.

Professor HARVEY CUSHING (Boston, U.S.A.) gave an admirably clear and well-illustrated account of much of his own experimental and clinical work on disorders of the pituitary body. He exhibited pictures of dogs whose hypophyses had been removed, and followed them up with pictures of human beings presenting very analogous—*mutatis mutandis*—syndromes. The adiposity and infantilism characteristic of Frölich's syndrome might, to some extent at any rate, be inherited; a lantern slide was exhibited showing a grandmother and a mother who both presented several of the outward features of the syndrome; while the daughter, just the fat and foolish-looking child that might have been expected from such an ancestry, exhibited the syndrome in all its completeness. Professor Cushing brought a new type of dyspituitarism to the attention of his audience. The patients of this type are thin instead of being fat, but exhibit the same loss of the secondary sexual characters (though perhaps by retrogressive change) as the patients of the commoner adipose type. He made reference to several other types of dyspituitarism, and showed how in some the disease had been diagnosed as myxœdema, and had received the treatment appropriate for that condition without benefit. He had found that the administration of pituitary extract improved these patients, and he took such a therapeutic success to be evidence of the correctness of his diagnosis. Another patient, whose picture he showed, a girl aged 6 years,

looked as if she was 16 years old; she had menstruated from the age of 2, and her secondary sexual characteristics had made their appearance when she was 3. He pointed out in conclusion that further researches into the functions of the pituitary gland would very likely throw light upon the physiology of sleep; research had already done something to illuminate the part played by the gland in hibernation.

Other points in the correlations of the ductless glands in both health and disease were brought out by other speakers, including Professor P. T. HERRING (St. Andrews), Dr. W. FALTA (Vienna), Dr. W. BLAIR BELL (Liverpool), Professor SWALE VINCENT (Winnipeg), Professor G. MURRAY (Manchester), Professor P. MORSALINE (Buenos Aires), and others.

In replying to and commenting on a number of the points raised during the discussion, Professor GLEY took occasion to emphasise the fact that hyperplasia of a gland—of the suprarenals in granular kidneys, for example—was not necessarily equivalent to its functional hyperactivity, an assumption too often made.

The hall in which this joint meeting took place was crowded to its utmost capacity, and the discussion maintained an unusually high level of excellence and was most interesting.

The afternoon session was occupied by the reading of three good papers. The last of these, by Dr. HAVEN EMERSON (New York) dealt with the occurrence of the

*Status Lymphaticus (or Lymphatism) in Adult Males.*

It might be noted, he said, that the general public came to hear of this rather uncommon condition mainly by means of the coroner's court; for the children or adolescents who suffered from lymphatism were those who were liable to die suddenly and unexpectedly while under the influence of an anæsthetic. Dr. Emerson brought forward a number of considerations to show that the milder degrees of status lymphaticus were surprisingly frequent in the men treated for chronic alcoholism and insanity. His facts and figures were drawn from 1000 of the male patients admitted to the alcoholic wards of the Bellevue Hospital in New York. No less than 220 of these patients showed most if not all the physical attributes characteristic of the status lymphaticus. The chief of these attributes were as follows: scantiness or absence of the hair on the lip, chin, chest, and axilla; a feminine type of distribution of the pubic hair; a tendency to narrowness and length in the thorax; a notable roundness and arching of the thighs and roundness of the upper arms; and smallness of the penis and testes. Often the skin was soft and velvety, and peculiarly free from hairs. Dr. Emerson failed to find the enlargement of the spleen that is so commonly said to occur in lymphatism. Examining the hospital post mortem records, he found 288 cases of status lymphaticus in 3600 obductions, and 242 of these patients had succumbed to infectious diseases such as tuberculosis, pneumonia, meningitis, and enteric fever. He drew the conclusion that persons with this mild or incomplete type of lymphatism were bad subjects for surgical operations, were prone to die (when normal people would recover) if they contracted an infectious disease, and showed a tendency to alcoholism, the drug habit, and insanity. He did not go so far as to say that they were social undesirables, but he was of the opinion that they should be protected both against infectious disorders and against themselves.

## SECTION VI.—MEDICINE.

### SATURDAY, AUGUST 9TH.

*President*, Sir WILLIAM OSLER, Bart. (Oxford).

An important discussion on

*The Pathology of Heart Failure*

was held during the morning session. It was opened by Professor H. VAQUEZ (Paris), who began with an account of the various methods of clinical investigation that told when heart failure was to be expected or diagnosed. The chief of these were acceleration of the pulse-rate, fall in the arterial blood pressure, changes in the cardiac rhythm (and particularly the appearance of certain forms of irregularity), and alterations in the form of the tracings furnished by the electrocardiograph. He was particularly anxious that the talented employers and interpreters of the electrocardiograph should not permit zeal to outstrip discretion, and should not attempt to draw from the electrocardiogram deductions more precise than present knowledge warranted. Professor Vaquez thought that examination with the X rays, especially when repeated from day to day, gave more valuable information about heart failure than any other method of examination. He went on to point out that failure of the heart might be either partial or total, and might affect different chambers of the heart in different cases. Thus, failure of the auricles was not rare in mitral disease, and often really seemed to make but little difference to the patient. Failure of one or other of the ventricles of the heart was commoner; failure of the left ventricle was the cause of those painful palpitations and attacks of painful dyspnœa that frequently occurred towards the end in severe cases of heart disease, and at any time often brought with them sudden death. Primary failure of the right ventricle, contrariwise, was characterised by quite other features—painless shortness of breath on exertion, with only a slight increase in the rate of the pulse. Total cardiac failure involving all four chambers together was rare; it might occur in healthy persons after prolonged and violent muscular exertion—in Marathon runners, for example. But it might also occur, oddly enough, in the pot-house patrons of such athletes, a form of slower onset seen in those who drank vast quantities of beer (the Munich or Tübingen beer-heart, so-called). Professor Vaquez asked, and the next speaker, Professor Wenckebach, repeated the question, why prognosis in cardiac disease was so often unsatisfactory or even totally wrong? Because of debility of the heart muscle, they believed, and inability to form any correct clinical estimate of the degree of this debility. Arrhythmia had been pointed to as an index of the impairment of cardiac muscle, but this was a mistake; arrhythmia indicated impaired cardiac mechanism, and told nothing about the functional competence of the muscular substance of the heart. In fact, the only way of estimating the reserve power of the myocardium was the very unsatisfactory one of watching the progress of the malady.

Professor K. F. WENCKEBACH (Strassburg) expounded a method of measuring the reserve of cardiac power by estimations of the contractility of the heart muscle; the method, however, though of great theoretical interest, did not admit of any practical application at the bedside.

Professor W. T. RITCHIE (Edinburgh) next drew attention to "auricular flutter," a condition akin to the auricular fibrillation that had been brought so prominently to the fore by the electrocardiograph. When fluttering the cardiac auricles beat from 200 to 350, or even 380, times a minute; the ventricles often followed at only half that rate. He quoted cases to prove that neither auricular flutter nor auricular fibrillation deserved the gloomy connotation so commonly ascribed to them. They might last for years without harming the patient, and their establishment might even be associated with improvement in his general condition.

Dr. L. F. BISHOP (New York) struck out a new line by attributing heart failure to protein poisoning, and proposing to treat it by dieting and exhibiting repeated full doses of castor oil.

Dr. ALEXANDER HAIG (London) attributed heart failure to uric acid.

Of the other speakers several drew attention to the care that should be exercised in giving a bad prognosis in cases of morbus cordis. To diagnose "weak heart" as was so often done was almost always wrong, as Professor W. S. THAYER (Baltimore) pointed out.

Dr. JAMES J. WALSH (New York) emphasised the importance of encouraging cardiac patients to think as well of their physical condition as possible. The influence of the mind upon the body was particularly well marked in these patients; to give them a bad prognosis was simply to dishearten them. The physician was justified in giving the best prognosis he could, or even better still, to the victims of morbus cordis, a sentiment that was much applauded.

Dr. E. LIBMAN (New York) read an interesting and very complete account of

*A New Form of Subacute Bacterial Endocarditis,*

which his researches had enabled him to isolate from that refuse heap of unclassified cases known as "malignant endocarditis." This form of endocarditis occurred mostly in persons who had already got chronic valvular disease, a fact that suggested a relapse perhaps, rather than an infection with a new variety of microbe. The cases lasted for from

four to 18 months, and in the great majority of cases ended fatally; but a few spontaneous recoveries and a few recoveries attributed to various forms of treatment had been recorded. The microbe causing the endocarditis he had isolated in 73 out of 75 cases; it was almost always a streptococcus of a peculiar type, intermediate between the pneumococcus and the ordinary streptococci, and he proposed to name it the Streptococcus mitis. A special form of glomerular nephritis was characteristic of the new variety of endocarditis, and this was illustrated by lantern slides and explained by Dr. G. Baehr (New York), who was associated with Dr. Libman in his work.

As Dr. F. J. POYNTON (London) indicated, a special interest was attached to this form of heart disease, inasmuch as it seemed to be very closely connected (if not, indeed, identical) with a form of rheumatic endocarditis described by himself and Dr. Alexander Paine in 1900. So far as Dr. Libman's investigations went, however, it appeared that steptococcus mitis was not the same as the strains of the rheumatic diplococcus which Dr. Libman had been able to lay his hands on for purposes of comparison.

The afternoon session was devoted to the reading of a series of papers on cardiac subjects.

Dr. J. COWAN (Glasgow) gave an account of half-a-dozen cases of nodal rhythm and heart-block occurring during the course of acute infectious fevers.

Dr. A. E. COHEN (New York) described some of the effects of digitalis on the heart.

Dr. R. OHM (Berlin) described a new and simple, or fairly simple, method of obtaining simultaneously tracings of the arterial pulse, the venous pulse, and the heart sounds. In this, as in the previous papers, free use was made of a projection apparatus and screen. Dr. Ohm's tracings showed clearly that his apparatus would be of considerable assistance in the diagnosis of certain forms of valvular heart disease, and also for didactic purposes.

Dr. A. PAINE (London) and Dr. POYNTON (London) next presented a valuable summary of their

*Recent Work upon Rheumatic Endocarditis.*

It was pointed out that in man the rheumatic diplococcus was capable of producing every form of endocarditis, from the most benign simple variety to the most malignant. In animals similarly every variety of endocarditis could be produced by the intravenous injection of cultures of the diplococci taken from cases of rheumatic fever in human beings. Many forms of non-suppurative arthritis could be produced in animals, and a number of pictures were thrown upon the screen showing the extensive circumarticular fibrosis and inflammation commonly produced, while others illustrated the fact that a typical rheumatoid arthritis, with lipping of the bones and erosion of the cartilages all complete, might result from such experimental infections of the joints in rabbits. A very striking set of pictures illustrated the acute appendicitis that might follow, again in the rabbit, upon the intravenous injection of rheumatic diplococci. Twenty rabbits six weeks old were inoculated with the organisms obtained from a case of rheumatic fever; 19 developed polyarthritis, 4 appendicitis, and 1 endocarditis. Microscopical sections of the inflamed appendices made it obvious that the rheumatic appendicitis of the young rabbit is in every way a replica of acute non-suppurative appendicitis in man. Necrosis of the lymph nodules towards the periphery of the rabbit's appendix was conspicuous, followed by necrosis and disintegration of the greater part of the Lieberkühn's follicles and crypts opening into the lumen of the tube. Dr. Paine laid stress on the rapid phagocytosis of the organisms that took place in both rheumatic rabbit and rheumatic man. He held that it accounted for much of the difficulty experienced by so many observers in isolating the rheumatic diplococcus from rheumatic patients.

Dr. A. D. HIRSCHFELDER (Baltimore) next read a paper on

*Various Simple Modes of Diagnosing Circulatory Troubles*

that are commonly believed to require the use of expensive and complicated pieces of apparatus for their demonstration. Among the points he dealt with was the naked-eye observation of the venous pulse at the root of the neck. By laying the patient in the horizontal position the internal jugular vein could very generally be made to stand out in relief upon the surface of the neck. Its edge and its pulsations could be thrown into better relief by holding the margin of a white visiting card parallel to its course and in close proximity to its border. This white card gave a fixed point that appeared to amplify and at the same time define any pulsations that the vein might show. He illustrated the use that might be made of these pulsations in the diagnosis of various forms of irregular cardiac rhythm. For example, auricular extrasystoles could be seen to occur in pairs, ventricular extrasystoles singly, and he noted that these produced extremely large and forcible venous pulsations; in complete heart-block the number of extra auricular systoles intercalated between the ventricular beats varied in successive diastoles and was inconstant.

MONDAY, AUGUST 11TH.

The morning session was occupied by a very satisfactory discussion on

*Diabetes Mellitus.*

The subject was introduced by Dr. G. DOCK (St. Louis), who went fully into the different views that have been published in the hope of clearing up its etiology. The connexion of diabetes with the pancreas was well known; perhaps too much attention was paid to the pancreas in diabetes and too little to the other organs of the body. The control exercised by the central nervous system on the sugar-producing functions of the liver was better recognised nowadays than it used to be; the fact than many spots in the brain, besides the diabetic centre of Claude Bernard, gave rise to diabetes on puncture was not sufficiently recognised. Reference was made to Cushing's admirable work on the pituitary gland; its posterior lobe played an important, if indefinite, rôle in the metabolism of the carbohydrates, and its glycolytic function appeared to be under the control of the superior cervical ganglion of the sympathetic. Acidosis, the terminal event that brought on diabetic coma in so many cases of diabetes, was connected with decrease in the amount of carbohydrate in the diet, increased fat-metabolism, and increase in the formation of sugar from the proteins of the bodily tissues. In the treatment of the disease, now mainly a matter of dieting, it was important to secure the attention and intelligent help of the patient.

Professor C. VON NOORDEN (Vienna) gave a succinct account of the most recent views of the way in which the carbohydrate metabolism of the body is regulated. Needless to say, this regulation was highly complicated, and it was hard to decide at what point a description of it should begin. However, starting with the intestine, it might be said that it poured the sugar—glucose—absorbed from the food into the portal vein. This glucose was seized by the liver and stored in the form of glycogen. The liver retailed this glycogen, converted once more into the form of glucose, in accordance with the demands made upon it by the tissues. Professor von Noorden presented to his audience a diagrammatic scheme in which the control of the glycogenic function of the liver was set out. The pancreas was the organ that tended to keep the consumption of sugar down; the chromaffin system (or, to mention its chief constituent, the suprarenal gland) tried to increase its consumption. But the pancreas was in turn controlled by the thyroid gland, the parathyroids, and the hypophysis; while the chromaffin system was under the control of the central nervous system. All these controls, except that of the central nervous system, were exercised by the medium of the secretions of the various glands concerned, conveyed about the body by the blood-stream. The regulation of the glycogenic function of the liver by the pancreas and chromaffin system in the normal subject was such that the blood contained from 6 to 8 parts of glucose per 10,000. In diabetes this quantity was increased, either because the inhibiting power of the pancreas was weakened, speaking generally, or because the augmenting power of the chromaffin system was increased. In Claude Bernard's diabetic puncture of the brain, for example, the glycosuria was due to the central stimulation of the chromaffin system. Acidosis was fatal by removing the ammonia and alkaline bases from the body in excessive amounts; diabetic coma was the expression of alkaline poverty of the tissues. Coming to the treatment of diabetes, Professor von Noorden was on familiar ground; the subject is one on which he is an authority *nulli secundus*. Drugs were but little given to diabetics as such nowadays; the treatment consisted almost entirely in setting each patient to live on exactly the diet that suited him best. A sugar-free diet was first given to reduce the glycosuria to the

lowest possible value; in favourable cases the sugar disappeared from the urine. The next step was to ascertain by direct experiment what was the limit of the patient's tolerance for carbohydrate; sugary or starchy foods were added cautiously to the dietary, and their effect in producing glycosuria was carefully watched. These tolerance tests required the constant supervision and regulation of the physician. It was most important that the body's sugar manufactories should at no time be over-burdened; the urine must be kept as free from sugar as possible, or the disease would progress. Too much must not be expected from such treatment; there always would be cases that progressed in spite of the greatest care, because the lesions on which the disease depended were sometimes inevitably progressive. In severe cases he advised the adoption of alternating periods of carbohydrate feeding and carbohydrate starvation. Most patients should have plenty of fat in their diet; in severe cases two or three ounces of whisky should be given every day. Ten years ago Professor von Noorden invented his well-known "oatmeal cure"; first the glycosuria must be reduced by strict dieting, then about half a pound of oatmeal a day should be added to the diet for several days in succession. The oatmeal treatment was found to do good, but for what reason it did so was not understood. Banana cures and flour cures worked on similar lines had also been employed successfully.

Professor G. ROSENFELD (Breslau) read a paper on

*The Effect of Giving Various Forms of Carbohydrate that were not Chemically Related to Glucose to Diabetic Patients.*

Many such carbohydrates had been tried with varying and inconstant degrees of success; glycerine, arabinose, inulin, lactose, and others were specially to be mentioned. He brought forward a new carbohydrate that seemed not to increase the sugar production of diabetics, known by the commercial name of hediosite; the name by which it was known to the chemist was glycoheptonic acid. It was well absorbed; most patients could take from one to two ounces of it a day, many could take three or four ounces, but the larger doses might set up diarrhœa. It was a form of carbohydrate that could be utilised and burnt up by the tissues of even the worst cases of diabetes, and in some unexplained manner it seemed to lessen the glycosuria. Various other points were discussed by the readers of half a dozen papers subsequently.

Dr. P. J. CAMMIDGE (London) introduced to his hearers a new Urinary Test—the iodine coefficient of the urine—whereby it was possible sometimes to foresee the appearance of sugar in the water of a patient with pancreatic disease some weeks beforehand.

Lieutenant-Colonel K. PRASAD, I.M.S., gave an account of diabetes in India; it was not a rare disease among the Hindus, and their medical men treated it mainly by drugs that soothed the nervous system. Dieting did not occupy a large place in the treatment, and only a very mild degree of limitation was put on the consumption of carbohydrate. A uniformly bad prognosis was given.

Dr. LABBE (Paris) was on well-trodden ground when he read a paper proposing to divide diabetics into two classes clinically—the fat diabetics and the thin.

Professor R. SAUNDBY (Birmingham) spoke of a number of practical points that should be kept in mind by practitioners who had to treat diabetes. He urged that too much meat should not be given, for too much meat was almost as bad as too much carbohydrate. It was important to remember that many of the diabetic foods advertised as free from starch were not by any means free from it; fraudulent manufacturers of such foods were only too common. He could not agree with Professor von Noorden's advice to give alcohol to these patients in any quantity.

At the afternoon session the section divided its forces into two. The papers read at one *séance* dealt with such subjects as duodenal ulcer, peptic ulcer, and functional tests of the liver. At the other the pneumothorax treatment of pulmonary tuberculosis was expounded by Dr. SAUGMAN, of the Vejlefjord Sanatorium. He had treated 186 patients and made some 5000 punctures of the pleural cavity, and gave a statistical summary of his results. One patient who had been ill for nine years and had a destructive infiltration of the whole of the left lung had been treated with artificial pneumothorax successfully for five years. She continued fit for work and social life, and had had no less than 106 inflations of the pleura. The treatment was suitable for many of the advanced cases for whom no other method of treatment held out any hope of relief.

Dr. ROWNTREE (Baltimore) read an interesting paper on

*A New Test for Ascertaining the Functional Efficiency of the Liver.*

Experiment had shown that the normal human liver excretes into the intestine some 30 per cent. of a dye, phenoltetrachlorphthalein. When the liver was diseased the percentage of the dye thus excreted lessened. The test should be of service in a number of morbid conditions in which information as to the functional activity of the liver was desirable.

Professor M. EINHORN (New York) gave an account of

*The Diagnosis and Treatment of Duodenal Ulcer,*

recommending in no uncertain tones that its subjects should generally receive medical rather than surgical treatment. Complete rest was a most important factor in any treatment that might be advised. He also introduced to the audience his method of duodenal alimentation. The patient swallowed a fine tube of soft rubber; when its orifice laid well in the duodenum the tube was used for the passage of liquid food.

Dr. T. R. BRADSHAW (Liverpool), who subsequently read a paper giving his own highly satisfactory experience with a modified Lenhartz treatment of peptic ulcer, raised the objection that the contact of this tube with the duodenal ulcer was but little calculated to promote the complete rest that Professor Einhorn had advocated earlier in his paper. But rest was a relative term.

Professor EINHORN replied, and the possible contact with the rubber tube was much less irritating to the inflamed or ulcerated duodenum than the passage of gastric contents, inevitable if the patient was fed by the mouth, would assuredly be.

## TUESDAY, AUGUST 12TH.

At the beginning of this morning's session the PRESIDENT put to the crowded audience a motion affirming the importance and necessity of vivisection, carried out as it was under due control, for the progress of medical science. The motion was carried unanimously. A vote of thanks to the President and the General Secretary of the Congress was also put to the meeting, and was carried by acclamation.

The PRESIDENT then called on Professor L. F. BARKER (Baltimore) to open the day's discussion on

*The Differentiation of the Diseases included under the title Chronic Arthritis.*

Professor Barker gave his hearers an exhaustive survey of the history of the nomenclature that had burdened and confused these chronic joint troubles. In the earliest days any acute disease of the joints was called arthritis, any chronic disease was called gout. G. D. Baillou about 300 years ago reversed this, describing chronic conditions as arthritis, and acute inflammations of the joints as rheumatism. Rheumatoid arthritis was a name invented in 1859 by Sir Alfred Garrod. The more recent classifications of joint troubles showed greater complexity; thus a few years ago Hoffa and Wollenberg divided all chronic joint affections into two main classes, the infectious cases and the non-infectious. Each of these classes was subdivided into five further divisions. Professor Barker noted with satisfaction that, nowadays at any rate, the term gouty was applied only to cases with a definite disturbance of the protein metabolism. Rheumatism, on the other hand, could not be as closely defined; speaking as if he were unacquainted with the researches of Poynton and Paine, he went on to add that the microbe of rheumatic infection was unknown to us, unless it were a streptococcus very recently isolated by Rosenow. He commended the modern tendency to restrict the terms rheumatic and rheumatism to true acute rheumatic fever and its chronic sequels—if, indeed, it be the case that such a fever had any chronic sequels in the affected joints. Many classifications of chronic arthritis had been attempted on pathological or etiological or morphological bases, or, worse still, by the use of mixed criteria. In conclusion, he distinguished five main types—(1) the gouty; (2) the nervous; (3) arthritis deformans; (4) chronic infective arthritis; and (5) primar progressive chronic arthritis apparently not due to any infecting agent. He dwelt on the fact that in proportion as our knowledge increased so were they able to transfer cases from group (5), with its unknown etiology, to group (4), in

which the bacteria causing the arthritis were known. Complete knowledge, he believed, would some day enable them to empty group (5) into group (4) altogether; at present, however, this could not be done. It was a remarkable thing that cases falling into group (5) had been reported from all countries.

Professor F. VON MÜLLER (Munich) followed, and he gave a very full and most instructive account of the pathology of chronic arthritis. A special feature of his address was the skill with which he figured on the blackboard the many morbid changes that might be met with in such conditions. Many of the changes were of a degenerative rather than an inflammatory nature, particularly in those forms of chronic arthritis in which hypertrophy was a marked feature. He drew attention to the curious arthritic and periostitic changes not rarely met with in patients suffering from non-inflammatory mediastinal new growths.

Dr. PRESTON KING (Bath) deplored the unhappy terminology employed in descriptions of chronic arthritis, and agreed with Professor Barker in believing that his fourth and fifth groups would one day be merged.

Professor SINGER (Vienna) spoke of the care needed in discriminating those cases of chronic arthritis due to tuberculosis or syphilis from the other varieties.

Dr. J. BARNES BURT (Buxton) emphasised the important actions of exercise and work in determining the exact nature of the changes produced in chronically inflamed joints. Very similar changes, he called the phalanx of a London cabhorse to witness, might be produced by overwork alone. How many of the hypertrophic changes in the bones of chronic arthritis might well be due to the work done, the use made of the joint, and not to the inflammation at all?

Dr. HALE WHITE (London) expressed his belief in the unity and existence of a chronic arthritis that had been recognised in this country for more than half a century under the name of rheumatoid arthritis. It was correctly placed by Professor Barker in his fifth group of cases; Dr. Hale White believed that it was due to a specific microbe that had never been isolated hitherto, and pointed out that the primary change, seen in early cases of rheumatoid arthritis, was confined to the synovial membrane.

Dr. F. J. POYNTON (London) pointed out that whereas in days gone by chronic arthritis was attributed to errors of metabolism, at the present time the tendency was to attribute it to infection in every case. He believed that the truth lay somewhere between these two views. Injected intravenously into the rabbit, the rheumatic streptococcus isolated by Paine and himself was capable of producing any and every variety of chronic arthritis; further, the effusions withdrawn from such joints would often prove sterile, although one could have no reasonable doubt that they were in reality infected with the rheumatic streptococcus.

Dr. A. E. GARROD (London) deprecated the want of an international nomenclature, by the use of which the confusion at present reigning in the description and classification of cases of chronic arthritis by the writers of different nationalities now prevalent might be got rid of. Modern treatment was undoubtedly better than the old, as was proved by the smallness of the number of very severe types of chronic arthritis to be seen nowadays.

### *Miscellaneous Papers.*

A number of other papers were read. Among them was one by Dr. L. A. CONNER (New York), who had been recently struck by the resemblance to lobar pneumonia that might be presented by cases of pulmonary embolism. The emboli were detached fragments of venous thrombi. He referred to the well-known fact that the signs and symptoms of pulmonary embolism might be the first thing to draw attention to the existence of thrombosis in a patient's venous system.

Dr. H. C. JACOBAEUS (Stockholm) gave an admirable account of the practical utility of laparoscopy and thoracoscopy. This new method of physical examination entailed the puncture of the abdominal or chest wall with a stoutish trocar. The trocar was fitted with an electric lamp and eyepiece, and was so constructed that when its point had been introduced into a cavity the lamp could be lit and the observer could examine the contents and the walls of the cavity directly with the naked eye. He had used the method in some 200 cases, and had never found it did harm to the patient. He quoted a number of instances in which it had yielded him useful information about the patient's viscera, and a number of coloured drawings were thrown upon the screen exhibiting the appearances seen through the laparoscope (or thoracoscope) in such cases as tuberculous peritonitis, cirrhosis of the liver, abdominal tumour, pleurisy, and the like.

The meetings of the Section of Medicine came to an end with the morning session. Every one of its meetings was well attended, even the meeting held on Saturday afternoon, an afternoon that is commonly held sacred to play in this country. The President and secretaries are to be congratulated upon the skill and success with which they got through so heavy a programme of work in the five days on which the section met.

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## SECTION VII.—SURGERY.

### SATURDAY, AUGUST 9TH.

*President*, Sir WILLIAM WATSON CHEYNE (London).

Professor RUDOLPH MATAS (New Orleans) opened a discussion on

### *The Surgery of the Arterial System.*

He referred to the very great advances which had been made in the surgery of the blood-vessels even within the last ten years; and as time would not permit a discussion of the whole subject he confined himself to the surgical treatment of aneurysms. It was now 25 years since he performed his first operation for aneurysm, and now in all 225 cases had been recorded by himself and by other surgeons. The operations which he had introduced were suitable for aneurysms of all parts of the body where asepsis and complete hæmostasis could be obtained. Of the 225 cases, 194 affected the lower limb, 23 the upper limb, 4 involved the carotid artery, and 4 the abdominal aorta. Of the whole number 53·3 per cent. were aneurysms of the popliteal. As to the operation performed, in 150 cases the obliterative operation was done, in 50 the restorative, and in 25 the reconstructive. Of the 225 cases, 206 were successful, in 4 cases gangrene followed, and all the four operations on aneurysms of the abdominal aorta were followed by death.

Professor Dr. V. A. OPPEL (St. Petersburg) had prepared a paper, and a synopsis of it was distributed, but the paper was not read.

Mr. C. A. BALLANCE (London) mentioned that some years ago he had performed a number of experiments on the suture of vessels. He regarded endo-aneurysmorrhaphy as a great advance, but he doubted whether arteriorlasty would meet with general acceptance except in the aorta. On the whole, he was inclined to think that endo-aneurysmorrhaphy should be confined to those cases in which the Hunterian operation was inadmissible.

Dr. A. L. SORESI (New York) held that any successful method of vessel suture must be rapid in order to prevent coagulation, and the methods of Carrel were too slow. Thrombosis was due to injury of the intima, and it was essential that no foreign body such as a suture should enter the lumen of the vessel. He had devised and employed a method of placing minute metal clips on the everted edges of the vessel so as to bring intima into contact with intima.

Dr. ERNST JEGER (Berlin) showed a number of specimens of suture of vessels which he had done. He had invented a pair of twin forceps which made the lateral union of two vessels much more simple. He had succeeded in replacing portions of the walls of large blood-vessels, and also in making a large blood-vessel from a small one. He had used small magnesium plates in suturing vessels, and he had shown that in animals it was possible to unite the innominate artery to a branch of the pulmonary artery so that one lobe of the lung was supplied with arterial blood; he had also succeeded in making a junction between a blood-vessel and the left ventricle of the heart. He did not venture to say that operations on the human heart were likely, but he had shown the possibility.

Dr. CHARLES GOODMAN (New York) pointed out that thrombosis was the great difficulty in vascular surgery. It was essential to isolate the operation field from the rest of the wound. He did not hesitate to pass stitches through the intima, but they must not project into the lumen of the vessel.

Dr. V. SOUBBOTITCH (Belgrade) read a paper on Military Experiences of Traumatic Aneurysms. He gave the results met with in the recent Balkan wars. In 41 cases large

arteries were tied, and in 4 cases large veins were tied. Partial suture was performed on 8 arteries and 9 veins, and circular suture was employed on 11 arteries and 4 veins. Of especial interest were the arterio-venous aneurysms, and in these it was found necessary to dissect the artery and vein away from each other, and then resection, suture or ligation was performed as seemed best.

Dr. N. A. DOBROWOLSKUJA (St. Petersburg) described a series of experiments which she had made in the suture of blood-vessels, and she exhibited some specimens which showed how excellent a union had been obtained even in small vessels. In the method she employed the ends of the vessels were slit so as to give a large area for end-to-end suture. End-to-side suture was also shown.

Dr. DANIS (Brussels) gave particulars of some interesting experiments he had made on the effect on blood pressure of ligature of the vein as well when a large artery was tied, and he was convinced that the effect on the blood pressure was better than if the artery alone were tied. He was also led to lay down the rule that the artery to a part should never be tied to improve the circulation damaged by injury to a vein.

Dr. A. CHIASSERINI (Rome) gave an account of experiments on employing pieces of fascia lata to replace portions of the abdominal aorta in dogs. Although the use of a collateral vein was the ideal method of replacing a portion of artery, yet when a suitable vein could not be found he had used glass tubes lined with paraffin, and in one case no thrombus had formed, but in most cases a thrombus formed in the interior of the tube.

In his reply Professor MATAS stated that our knowledge of the proliferative power of the endothelium of blood vessels was due to Ballance. He also showed some aluminium strips for temporarily compressing vessels.

Dr. PAUL DEGRAIS (Paris) read a paper, written in conjunction with Dr. LOUIS WICKHAM (Paris), on

*The Assistance of Radium to Surgery in the Treatment of Malignant Disease.*

It was shown that radium was capable in some cases of causing the complete disappearance of malignant growths which were considered inoperable; but radium had another function—it could sometimes reduce the size of a tumour so as to render it operable, even though previously it had been regarded as beyond surgical intervention. The details of several striking cases were given illustrating the value of radium in treatment.

### TUESDAY, AUGUST 12TH.

Professor Dr. F. SAUERBRUCH (Zürich) opened a discussion on

*Intrathoracic Surgery.*

He said that much had been done in the past, and he gave a brief history of the surgery of the thorax, and then he considered the factors which had assisted the progress of this branch of surgery. One important aid to diagnosis had been provided by the discovery of the Roentgen rays, for by their assistance we had been enabled to obtain information impossible by any other means. The investigations of pneumothorax were of importance, for they led naturally to a study of the question of the differences of pressure within the lungs and outside. The investigation of the question of absorption from the pleural cavity had also been fruitful and good. He then proceeded to mention the various methods which had been adopted to maintain the difference of pressure between the air inside and outside the lungs when the thorax had been opened. He explained the mode of action both of the positive and the negative pressure methods, and he stated that a difference of from 7 to 10 millimetres of mercury was amply sufficient to enable respiration to continue. He referred also to the Auer-Meltzer method of tracheal insufflation, but he appeared a little doubtful as to its ultimate utility. The technique of opening the thorax was then briefly described, and he stated that it was unwise to employ drainage if it could be avoided, for it was far better to close the wound completely, drawing the ribs together between which the incision had been made. He expressed the opinion that an exploratory thoracotomy was a procedure of little danger. He then considered the operation of thoracotomy when performed for pneumothorax or for hæmorrhage. He also referred to wounds of the heart and of the large vessels of the chest, and the surgery of the anterior mediastinum and of the œsophagus, and lastly he spoke of the surgical treatment of tuberculosis of the lung and of bronchiectasis. He looked forward confidently to great advances in the surgery of the thorax in the next ten years.

In the absence of Professor THEODORE TUFFIER (Paris) his paper was read by Dr. ERNEST CAILLAUD (Monte Carlo). After a discussion of the difficulties of diagnosis various points of the technique were considered, such as asepsis, and the anæsthetic to be employed. He pointed out that there was much tendency within recent years to replace resection of the ribs by separation. He had tried various methods of carrying on the respiration after the pleura had been opened, but he had come to the conclusion that the danger of an operative pneumothorax had been overrated, at least if the pneumothorax had been slowly produced. At the present time, however, he has returned to the use of an apparatus for distending the lungs, and that which he prefers is the one devised by Meltzer and modified by Elsberg. The surgery of the various intrathoracic conditions was then considered in detail, especial attention being devoted to the question of the value of excision of a portion of lung for tuberculosis, to an artificial pneumothorax, to thoracoplasty, and to Freund's operation.

Sir WILLIAM MACEWEN (Glasgow) wished to draw attention to two points. The first was the result he had obtained in removal of one lung for phthisis, and of this operation he had had four cases, and one of these was shown in excellent health 18 years after the operation. He had found that the heart was inclined to flap about in the pericardium after removal of the lung, and he had found it necessary to stitch up the pericardium in order to prevent this excessive mobility of the heart. The second point related to the physics of the chest. He said that it was usually taught that the lung remained in contact with the chest wall in consequence of the atmospheric pressure, but he did not accept this explanation, and he showed by an experiment that if two pieces of glass or rubber are pressed into contact they cannot be separated even when the atmospheric pressure has been reduced to a few millimetres.

Dr. S. J. MELTZER (New York), while appreciating all that Professor Sauerbruch had done for thoracic surgery, could not think that his methods of maintaining respiration were the best. He had found that the apparatus which he had invented was preferable; this was the intratracheal insufflator. This had often been described as a form of positive pressure instrument, but it was really an instrument for producing artificial respiration. It had been employed in several thousand patients, and harmful results had occurred only in the practice of those who had had but little experience in the work. In two cases in which it was necessary to carry on artificial respiration for a long time, his method was used for 10 and 12 hours respectively. The factor of safety was much greater with intratracheal insufflation than with any of the positive or negative instruments.

Dr. CHARLES A. ELSBERG (New York) spoke highly in favour of insufflation, for it was very efficient, and, moreover, incisions of the lung bled but little.

Dr. HENRY DELAGÉNIÈRE (Le Mans) gave a *résumé* of his thoracic surgery, and he showed a rubber "mushroom" which he had invented to prevent collapse of the lung.

Mr. G. E. GASK (London) exhibited a form of apparatus which he had devised for intratracheal insufflation. It was simple, portable, cheap, and effective. He had never found any irritation of the larynx produced by its use.

Mr. H. MORRISTON DAVIES (London) had had a series of cases of artificial pneumothorax for tuberculosis with good results. He had found that injection of the vagus with novocaine had been very useful in diminishing shock.

Dr. G. E. ARMSTRONG (Montreal) gave an account of a case in which he had removed a bullet from the pleural cavity after it had been there for five days. He showed by cardiograms the effect on the heart caused by the presence of the bullet.

Dr. DANIS demonstrated an apparatus which he had invented for the administration of ether or chloroform with positive pressure.

Dr. J. BOUCHON (Paris) laid great stress on quickness in operation, and he described several very ingenious instruments designed to increase the rapidity of the operation of opening the chest wall.

## SECTIONS VII. AND XI.—JOINT SESSION OF THE SECTION OF SURGERY WITH THE SECTION OF NEUROPATHOLOGY.

### MONDAY, AUGUST 11TH.

A discussion on

*The Treatment of Tumours of the Brain and the Indications for Operation*

was opened by Professor Dr. BRUNS (Hanover). He said that the surgical treatment of tumours of the brain consisted of two degrees—namely, the radical operation of removal of the tumour and the palliative operation of decompression, and this palliative operation might be done intentionally, or it might be found that nothing more could be done, though it was at first the intention of the surgeon to remove the tumour. The indications for the radical operation of removal and also the prognosis of the operation depended on three points. In the first place, the nature of the tumour had to be considered. Undoubtedly the most favourable for operation were those tumours which projected from the surface of the brain and those which were well defined, but it was often impossible to distinguish clinically between the infiltrating glioma and the circumscribed sarcoma. It was also often extremely difficult to diagnose between the true tumour on the one hand and an abscess and the granuloma, such as a gumma and a tuberculoma on the other. Secondly, the localisation of the tumour was of the greatest importance in determining the question of its removal. There were several parts of the brain where there were practically no indications as to the situation of the growth, and the less sure the surgeon was as to the site of the growth the less advisable was it to attempt its removal. Lastly, the accessibility of the growth had to be considered. There were few regions of the brain from which a tumour could not be removed, but it might be said that growths involving the third ventricle, and those situated deeply in the substance of the hemisphere were at present beyond the reach of the surgeon. A decompression operation was clearly indicated in those cases where the exact site of the tumour was unknown, and the general symptoms were very severe.

Professor Dr. FREIHERR VON EISELSBERG (Vienna) detailed the results of his operations on the various classes of tumours of the brain, the pituitary body, and also of the spinal cord. He showed specimens of many of the tumours removed.

Dr. H. H. TOOTH, C.M.G. (London), acknowledged the brilliant results which in a few cases had followed the operation for the removal of cerebral tumours, but he thought it should be more generally recognised that there had been a very great preponderance of failures, so that it became a question as to how far it was wise to proceed to a radical operation in these cases. He discussed the results obtained in a series of 500 cases of operation which he had collected. He pointed out that although it was possible to remove gliomata apparently completely, they were very liable to return and then to grow much more rapidly than before, and therefore he could not help thinking that if such tumours had been not touched they would probably have remained of the quiescent type. The exploration of the brain for tumours was highly dangerous and could only lead to harm. As to decompression it appeared in any case to be wiser not to incise the dura mater.

Professor HARVEY CUSHING (Boston, U.S.A.) mentioned that the subject was so large that it would not be possible to deal with more than a small portion of it. The question as to the results of the operations for tumours of the brain depended a good deal on what was meant by recovery. If the surgeon considered that loss of sight and cortical epilepsy were compatible with recovery then the percentage of recoveries might be considered to be fairly high, but if by recovery was meant a complete restoration to health then the percentage of recoveries would not be more than 5 per cent. In his last 100 cases the mortality of the operation had been 7, but one of these had suffered from diabetes and convulsions, which may have been uræmic. He was inclined to believe that endotheliomata of the dura did not really arise from the dura mater. For these operations in the occipital region he preferred the median incision, with the cross incision above, as it gave full access to both sides. For decompression in the occipital region he always removed the posterior half of the foramen magnum, and often the posterior arch of the atlas. He considered it to be of the greatest importance that these cerebral operations should be done very slowly; sometimes they took four hours, and were very exhausting to the surgeon.

Sir VICTOR HORSLEY (London) held that what was most needed was a histological diagnosis of tumours; that would be of the greatest advantage to the surgeon. As to the technique of the operation he had little to say. Hæmorrhage was of no importance, for it was easily controllable; if it were capillary, then hot water stopped it; if it were venous, then oxygen stopped it; and if it were arterial the judicious use of chloroform would suffice to lower the blood pressure and so put an end to the hæmorrhage. Sepsis was always less in private practice than in hospitals, and this showed that it was really controllable. He was inclined to favour antiseptic as opposed to an aseptic surgery. How could the results of the surgery of brain tumours be improved? The whole matter rested on early diagnosis. So long as the text-books continued to say that headache, vomiting, and optic neuritis were the signs of cerebral tumour, so long would the cases come to the surgeon at too late a stage. These three classical signs generally appeared at a time when the growth was becoming beyond the reach of operation. In one way optic neuritis might be of great value. If it were carefully noted as to which side it first appeared, that would show clearly the side on which the tumour was.

Professor Dr. FEDOR KRAUSE (Berlin) agreed that it was not right to call a patient cured while symptoms still remained after the removal of the tumour, but there were cases, though not numerous, in which perfect recovery followed the removal of a growth of the brain.

Professor H. CLAUDE (Paris) reported the results of his cases according to the various forms of tumour present. He was decidedly in favour of early decompression. It was especially important that cases should be seen in an early stage.

Sir WILLIAM MACEWEN held that any improvement in the future must depend on early diagnosis and early operation. The localisation signs were very few in the non-motor area.

Dr. BIANCHI (Naples), Dr. DE MARTEL (Paris), and Dr. BYROM BRAMWELL (Edinburgh) also spoke.

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## SUBSECTION VIIA.—ORTHOPÆDICS.

### WEDNESDAY, AUGUST 6TH.

*President*, Mr. ROBERT JONES (Liverpool).

Dr. LOUIS MENCIÈRE (Rheims) delivered an address upon his methods: (1) The "revolver osteotome," in which the cutting of the bone is carried out by means of an osteotome worked by pneumatic pressure; (2) a lever for the reduction of dislocation of the hip; and (3) phenopuncture in the treatment of tuberculosis of the bones and joints—i.e., the puncture of the joint and repeated injections of pure carbolic acid.

Dr. MAURICE DENUCÉ (Bordeaux) discussed the question of "sciatic scoliosis," suggesting that the sciatica is secondary.

Dr. MAX BÖHM (Berlin) and Dr. J. TORRANCE RUGH (Philadelphia) both strongly upheld the view that this condition was due to an osteoarthritis in the spine.

Mr. A. H. TUBBY (London) described his method of treating scars by numerous punctures and the inunction of fibrolysin and of Dupuytren contractions by open resection and the use of fibrolysin.

Mr. R. C. ELMSLIE (London), in a paper on the Pathology and Treatment of Coxa Vara, advocated conservative treatment.

### THURSDAY, AUGUST 7TH.

*Discussion upon the Treatment of Spastic Paraplegia.*

This discussion, introduced by Mr. E. MUIRHEAD LITTLE (London), Professor H. KÜTTNER (Breslau), and Professor O. VULPIUS (Heidelberg), showed that whilst orthopædic surgeons are not hopeful of securing complete cures in spastic paralyses, yet they are certain that by the methods at their command many of the patients may be much relieved. Most of the speakers were of the opinion that the methods advisable in the majority of cases are those of tenotomy, tendon lengthening, and tenoplasty; that the nerve operations, such as Stoffel's neurotomy, Allison's injection of alcohol into nerves, and Spitzy's nerve transplantation are useful in certain cases; and that Foerster's operation

of posterior root section should be reserved for the worst cases. With this conclusion Professor Foerster himself was in agreement. An important point in the discussion was the agreement of all that prolonged treatment by exercises to re-educate voluntary muscular movement is essential in all cases and after all methods of operative or instrumental treatment.

Professor O. FOERSTER (Breslau) gave some interesting details of his methods of carrying out this re-education, to which he has paid very careful attention.

At the afternoon session Mr. JACKSON CLARKE (London) described his operation for

*The Treatment of Cases of Congenital Dislocations of the Hip-Joint*

in which the dislocation recurred after the ordinary reduction by Lorenz's method.

The speakers who followed were agreed that the latter method was generally very successful, and gave, especially in young children, most perfect results, but that in occasional cases there was a tendency to the recurrence of the deformity. This was counteracted in Mr. Jackson Clarke's method by an open operation in which the capsule of the joint was exposed from behind, its upper overstretched part shortened by careful suturing, and the periosteum stripped from the bone behind the acetabulum in order to attempt to stimulate the production of additional bone at this spot. This method had been very successful in Mr. Jackson Clarke's experience.

### FRIDAY, AUGUST 8TH.

*Discussion upon the Treatment of Scoliosis.*

Dr. R. W. LOVETT (Boston, U.S.A.) laid great stress upon the necessity for a clear differentiation of false or postural scoliosis from the true or structural variety, and stated categorically that whilst the first was a muscle problem and yielded to muscle treatment—that was to say, to treatment by exercises—the true or structural form of the deformity could never yield to such measures. The failure to differentiate these two totally separate deformities had led in the past to the elevation of physical exercise treatment to a position as a curative measure that it did not deserve.

Professor SCHANZ (Dresden), the second reporter, and all the other speakers, with one exception, were in agreement with the view enunciated by Dr. Lovett. The further discussion centred chiefly round the methods of correcting structural scoliosis by force.

Dr. E. G. ABBOTT (Portland, Maine, U.S.A.) gave briefly the reasons that had led him to consider scoliosis as a deformity which commenced in the flexed position of the spine, and which should therefore be corrected by force applied when the spine was flexed. He held that scoliosis could be produced when the spine was flexed, bent to the side and rotated. He showed that he had in this manner produced a fixed curve, and he claimed that by over-correcting a structural scoliosis in this flexed position and by maintaining this over-correction for a sufficient period to enable the bones and ligaments to regain the normal, most cases could be cured.

In general the meeting was with Dr. Abbott, and all the speakers who had tried his method were of the opinion that it was the best and most generally useful of the methods of forcible correction.

*Club Foot.*

At the afternoon session several papers dealing with the treatment of club foot were read. Most of these were concerned in the main with the treatment of the severe varieties of the deformity, but it was of interest to find Dr. CÉSAR ROUX (Nice) advocating the correction of congenital club foot in infants in two stages—a method which may be said to have been the accepted one in England since the time of Adams.

### SATURDAY, AUGUST 9TH.

*The Treatment of Ankylosis.*

Dr. W. S. BAER (Baltimore) reviewed briefly other methods of attempting to secure mobility in a damaged joint, and then dealt more fully with those methods of arthroplasty with the interposition of membrane with which his name is specially known. He held that most cases of fixed joints could be given a good range of movement by means of this operation. Little bone should be removed, the ligaments of the joint must be conserved, and the bone surfaces must be kept separated by the interposition of some substance which would resist absorption for sufficiently long to enable the new fibrous tissue that was formed to organise fully. Such a substance was the membrane of pig's bladder, chromicised and sterilised. This would persist *in situ* for 60 to 120 days, and would then be absorbed. Successful cases out of a series of 50 were recorded.

Dr. V. PUTTI (Bologna) had worked chiefly on joints which were ankylosed after injury, and preferred to use free flaps of fascia, cut from the fascia lata. He also showed records of some very successful cases, particularly in the elbow-joint.

### MONDAY, AUGUST 11TH.

*Discussion upon the Treatment of Tuberculous Joints in Children.*

Professor J. DOLLINGER (Budapest) gave careful details of his own methods, in which he keeps to strictly conservative lines. He makes use of fixation of the joint, carried out in the lower limb by means of an extension splint to render walking possible, corrects deformity gradually, and treats abscess by aspiration. He considers that general treatment is important, allows that some benefit follows the use of treatment by direct sunlight, but that the results claimed by those who have used this method are at least partly ascribable to the simultaneous fixation.

Dr. JOHN RIDLON'S (Chicago) report was read for him by Dr. TORRANCE RUGH. He confined himself to the treatment of hip disease, and discussed first the accurate diagnosis of the disease, stating that many of the cases treated as such were not hip disease at all, and that it was now possible to locate the disease accurately by X ray examination. The disease was very often in the acetabulum. Mechanical treatment was essential, very little benefit had followed the use of medicines or of laboratory products, and very few cases required operation. After discussing the merits and demerits of the various forms of mechanical treatment used in this country and in America, Dr. Ridlon expressed his personal preference for the long traction splint.

Continuing the discussion, Professor VULPIUS described his institution in the plains near Heidelberg, claiming that to carry out the sun treatment the mountain sun and air of Switzerland were not essential.

Dr. A. G. MÉNARD (Berck-sur-Mer) in a most careful communication described his experiences of the end results of hip disease and the functional use of the resulting joint.

One of the most interesting contributions to the discussion was that from Dr. F. W. ALBEE (New York), in which he described his operation for the treatment of spinal caries by the transplantation of a strip of tibia into a cleft formed by splitting the spinous processes of the affected region. He had performed this operation 145 times with great success. The result was to secure synostosis of the posterior part of the diseased vertebræ, the fixation thus secured leading to early and rapid arrest of the disease. Dr. Albee performed this operation twice during the Congress in order to demonstrate it to members of the section. The operation is simple and safe. Subsequent speakers from America who had had experience of it were enthusiastic in its favour.

The discussion was continued by other speakers, Dr. A. ROLLIER (Leysin) describing his methods of sun cure and showing some photographs of wonderful recoveries, and Dr. MENCIÈRE describing his method of injecting carbolic acid in painful tuberculous joints.

At the afternoon session Mr. TUBBY recounted some experiences of

*Nerve Surgery,*

first reporting the further progress of cases that he had described at the last Congress, and then describing some additional cases. His conclusions were that injuries, such as those of the brachial plexus, were hopeful if the loss of power had not persisted for over four years, that improvement might take a long time, and provided it commenced early after the operation it might continue for as long as five years, that nerve grafting in infantile paralysis was so far disappointing, and that as secondary suture of a nerve did not give as good results as primary suture, no injury in such a region as the wrist should be sutured until the continuity of the nerves had been ascertained.

Further papers by Dr. P. DESFOSSES (Paris), Dr. MENCIÈRE, and Dr. ROYAL WHITMAN (New York) upon

*Methods of Treatment of Special Paralyses*

followed. Dr. Whitman's description of his operation for talipes calcaneus, in which he removes the astragalus and displaces the foot backward beneath the tibia, provoked considerable discussion, and Dr. Whitman by arrangement gave a demonstration of this operation at the Royal National Orthopædic Hospital.

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## SECTIONS VIIA. AND XXII.—JOINT SESSION OF THE SUBSECTION OF ORTHOPÆDICS WITH THE SECTION OF RADIOLOGY.

### TUESDAY, AUGUST 12TH.

*Discussion upon the Radiography of the Bones and Joints and its Value in Orthopædic Surgery.*

Three exhaustive reports dealing with this wide subject were submitted by Dr. NOVÉ-JOSSERAND (Lyons), Dr. G. F. HAENISCH (Hamburg), and Dr. P. REDARD (Paris). Dr. Redard dealt more particularly with general and special technique, insisting first upon the importance of rapid radiography and of stereoscopic work, and then discussing the technique of radiography of various regions. Dr. Haenisch referred to several important, although small, points in diagnosis, such as the partial displacement of epiphyses. Dr. Nové-Josserand gave a very full summary of the discoveries in bone and joint disease by the aid of radiography.

The discussion was continued by Dr. N. S. FINZI (London), who demonstrated by means of radiographs that in Madelung's deformity of the wrist there is an arrest of growth of the inner part of the lower epiphyseal line of the radius; by Dr. MAUCLAIRE (Paris), who also described an abnormality of this epiphyseal line; by Mr. ELMSLIE, who showed radiographs of two cases of the condition described by Calvé as pseudocoxalgie; by Dr. PAUL-VITAL BADIN (Paris) in a short paper on the Radiography of Flat Foot; and by others.

In the afternoon in the subsection of Orthopædics Dr. MURK JANSEN (Leiden) read a short paper upon the Vulnerability of Fast-growing Cells and the Connexion between this point and the Changes in Rickets which affect chiefly the Fast-growing Cells of the Epiphyseal Cartilages.

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## SUBSECTION VIIB.—ANÆSTHETICS, GENERAL AND LOCAL.

### THURSDAY, AUGUST 7TH.

*President*, Dr. DUDLEY W. BUXTON (London).

In welcoming the members the PRESIDENT said that that was the first occasion upon which anæsthetics had obtained recognition as an individual section. The innovation was justified if they compared the range of knowledge, and methods of practice of, anæsthetics which obtained in 1881, when last the Congress was held in London, with the conditions existing in 1913. Although such men as Bernard, Snow, and Bert had elucidated the action of chloroform, and Clover had initiated a reasonable method of giving ether, there was then little general knowledge and less practical skill. A few experts obtained good results, while the majority of patients both in and out of hospitals were anæsthetised by those who possessed slight scientific knowledge, and whose methods of practice were jejune. To-day a great advance had come, especially in methods. It was true that a vast amount of research had brought clear and accurate knowledge of the agents in use, and the scientific anæsthetist at the present time armed with this knowledge was able to select for each patient not only the safest drug but the method best suited to the physical state of the patient and the necessities of the operation. Not only was nitrous oxide and oxygen used for general surgery—the methods of the originator, Paul Bert, having become simplified and the action of the agent reinforced by preliminary injection of alkaloids—but ether could be given by intravenous infusion, intratracheal insufflation, colonic absorption, while chloroform had lost its terrors since the adoption of dosimetric methods. To such resources were added the splendid results accruing from spinal anæsthesia and local with conduction analgesia. The view held by the most thoughtful was that such methods were best used in conjunction. Dr. Buxton felt that when the anæsthetist had finally thrown off the rôle of handicraftsman, and had equipped himself with full knowledge of his science while he had perfected himself in his art, he would both assume his proper status in the eyes of his professional brethren and obtain due honour from the public whose lives it was his responsible duty to safeguard.

Professor TUFFIER (Paris) reported on

*Modern Methods of Spinal Anæsthesia.*

Tracing the history of the work—Corning (1885), Quincke (1891), Bier (1898), and Tuffier (1899)—he first discussed the claims advanced in favour of extradural injection, and described the technique. Failure sometimes occurred, and although minor accidents had been recorded no serious results were known. Anæsthesia, Professor Tuffier said, could be so obtained, but the technique was complicated and the results uncertain. With regard to intradural injections, he believes the failures in this method are due to mistakes in technique, which are often quite minor. Some of these were mentioned. The lower site for puncture Professor Tuffier regarded as safer than the high site. Jonnesco's statistics, even if considered to be encouraging, revealed the danger incident to the procedure. In discussing the agents in use, he stated that with the exception of M. le Filliatre, surgeons had given up the use of cocaine, since its rapid diffusion led to cerebral vomiting and other accidents incident to its action on the medulla. In order of toxicity he placed the agents cocaine, alexine, stovaine, tropacocaine, and novocaine (Le Brocq). Various authorities were cited who had employed these drugs alone or with adjuvant agents such as adrenalin, scopola-morphine, strychnine, or the addition of gummy substances had been employed to show that results varied greatly and complications were not excluded. Chaput's statistics with novocaine were more favourable. Barker's mixture of stovaine, glucose, and water, used by him and by Houghton, gave a good result. The deaths recorded by Chaput and Barker were not wholly due to the drug employed. Babcock's employment of stovaine with lactic acid, alcohol, and water, and the procedures of Angelisen, Athanasescu, who like Jonnesco added strychnine to the anæsthetic injected, were reviewed. That damage to the cord was possible seemed proved, but Professor Tuffier had not met with such cases. The mortality under the method he thought was difficult to ascertain as it varied in the different cliniques within wide limits. His own statistics were most favourable. Since novocaine had been used the death-rate was lower. The contraindications to, and indications for, the spinal route were fully dealt with, but on conventional lines, and Professor Tuffier's general conclusion was favourable to the method.

In the discussion which followed Mr. L. MCGAVIN (London) took exception to Jonnesco's statistics, which he regarded as unreliable. He spoke warmly in favour of intradural injection, and declined to accept the limits of its use imposed by the opener; indeed, from his experience he brushed aside the list of contraindications, except perhaps that of active pyæmic states. Adrenalin added to the danger, and the high puncture was, he thought, quite unjustifiable. The extradural method he considered was too unsatisfactory to compensate for the unfavourable results which even Professor Tuffier's own figures revealed.

Mr. C. A. LEEDHAM-GREEN (Birmingham) did not think the extradural method was difficult, but he regarded the analgesia produced as too feeble to have any value.

Other speakers, notably Mr. TYRRELL GRAY (London) considered spinal injection most useful for acute abdominal conditions, especially for young children.

M. LE FILLIATRE (Paris) described at some length his method of spinal puncture in the lumbosacral region, and gave the results of his anatomical studies, submitting that they proved that injections into the sac were safer and more reliable. He appeared to have had little trouble from cocaine, the drug he selected.

In the course of a most effective address on

*Local and Regional Analgesia,*

Professor Dr. HEINRICH BRAUN (Zwickau) rehearsed the great advances which had been made in this method since Schleich first suggested infiltration analgesia. Professor Braun's cases revealed the truth of his statement, for practically every region of the body according to his statements, which were supported by illustrations of the operations

performed, could be dealt with under local analgesia. The advance was due to the adoption of the method of injection about nerve trunks, and to the substitution of a practically safe drug, novocaine, for the dangerous one, cocaine. Extremely weak solutions of novocaine if mixed with very little suprarenin could be injected in large quantities, rendering even extensive areas insentient. This addition he deprecated for use in Bier's intravascular method of local analgesia, a method which he appeared to regard with favour. Beside giving a clear description of the combined methods of conduction and area blocking analgesia, Professor Braun dealt at some length with the regions of the body, head and neck, brain, thorax, abdomen and limbs, indicating his technique for producing analgesia in the operations practised upon them.

Mr. LEEDHAM-GREEN also reported upon this method. It had, he said, practically supplanted all other procedures for obtaining anæsthesia in his practice, and was, he thought, superior to spinal injection, which he therefore seldom employed. Bier's venous anæsthesia and Ranschoff's arterial method were, he submitted, too dangerous for use, indeed they had been rendered superfluous thanks to the degree of perfection to which infiltration and conduction analgesia had arrived. Traversing similar ground to Professor Braun he described his technique with attenuated novocaine solutions to which adrenalin or synthetic suprarenin was added. The addition of a trace of acid (Braun) to the saline solution enabled the anæsthetic fluid to be boiled without decomposition of the adrenalin or suprarenin taking place. Hydrochloride of urea and quinine had been less useful. The extremely complex ritual for local analgesia advocated by many authorities was, Mr. Leedham-Green thought, unnecessary, and he indicated how a simple procedure proved satisfactory provided the principle of the system had been mastered and was kept in view. He limited the employment of the method to operations upon areas easily and completely within the possibility of conduction analgesia; thus mammary carcinoma he would exclude as well as cases of abdominal operations. Kidney operations were unsatisfactory, but those on the lower urinary tract were satisfactory under local analgesia. Some cases—e.g., prostatectomy—were best done under a combined scheme of local and general anæsthesia; the technique of this was described. The drawbacks were the pain of the initial injections and the mental distress which nervous people experienced when they were conscious during an operation, and to meet this last objection he employed preliminary alkaloidal injections.

A discussion followed, which was summed up by the PRESIDENT.

## FRIDAY, AUGUST 8TH.

### *Discussion on Recent Methods of General Anæsthesia.*

Dr. R. H. FERGUSON (New Jersey, U.S.A.) had opened this discussion on the previous day with a report upon the

#### *Open Ether Method of Anæsthesia,*

but it had been found necessary to adjourn the completion of this report, which was a very voluminous one. Dr. Ferguson exhibited his ingenious mask and its coverings. He made the following postulations. The open ether method requires unrestricted interchange between the pulmonary air contents and the external air during the period that the ether vapour is being self-evaporated from the surface of the inhaler. Unless this is provided surgical anæsthesia cannot be obtained. The drop system is better than the semi-open, closed, or "vapour" methods. He had found that the results were sure, and the method had been tested upon a large number of cases in the United States and had proved satisfactory. In it the six essentials are: (1) No air must be admitted between the mask and the face—it must pass only through the gauze upon which the ether falls; (2) the patient must, however, have all the air required for his normal respiration, no definite relation between the quantity of air and the amount of ether vapour need exist; (3) there should be no waste of ether vapour into the room, as unless the administrator knows that all he presents to his patient really reaches him and is inspired no control of the anæsthetic is maintained; (4) the ether must fall in regular drops, the rate of dropping depending upon the operation, the lung capacity of the patient, and the rate of evaporation; (5) the ether must be evaporated before further dropping, as wetting of the gauze vitiates results; and (6) the mask should be kept upon the face until the operation is complete. Preliminary use of alkaloids was, he said, unnecessary, except in the case of very muscular or alcoholic persons.

The discussion which followed revealed some differences of opinion as regarded details of practice, the number of layers of gauze necessary, and so on. One speaker deprecated the introduction of new apparatus, as he contended that a semi-open system in which ether was evaporated from a chamber and in which a free airway existed gave better results than dropping.

The next report was upon

#### *Rectal Etherisation*

by Dr. J. H. CUNNINGHAM (Boston, U.S.A.), who regarded the system which he at present pursued—viz., forcing air over ether and through a tube into the rectum—as superior to the older methods in which ether vapour entered by virtue of its elastic expansion when warmed. His experience led him to regard the method as a valuable alternative one. He had met with few fatalities or serious after-effects.

The PRESIDENT pointed out that, although Dr. Cunningham had omitted to note the fact, it was he (the President) who revived the plan and had employed it, especially in operations on the thorax and on the upper air passages as well as for staphylorrhaphy in children. He regarded the use of an interceptor which he had introduced as essential to safety, since it was the condensed ether which caused proctitis. The less the bulk of vapour introduced the less the danger of meteorism, and so he did not encourage the use of an air-laden vapour.

Professor C. ARND (Berne) and Dr. A. L. FLEMMING (Bristol) continued the discussion and referred to the use of ether shaken up in saline and so introduced into the colon.

The general opinion was expressed that an inhalational anæsthetic was best for induction, as it lessened the danger of blocking at the ileocæcal valve.

#### *Intravenous Infusion of Ether*

was the subject of the next report by Professor L. BURKHARDT (Nürnberg). He pointed out the various dangers of inhalation, and affirmed that the intravenous route obviated them. The anæsthetics of the fatty acid series were, he thought, safer than were those of the veronal series, although he thought isopral might with advantage be infused as a preliminary to intravenous ether. The experiments on animals were more favourable to ether than to chloroform, as the latter was liable to engender deleterious tissue changes. In human beings 0·97 per cent. of chloroform and 5 per cent. (volume) of ether in saline were the strengths he advocated. Serious complications were rare in his 600 cases. Renal trouble, when it occurred, did so only in persons suffering from pre-existing kidney disease. Asphyxia was commonly due to over rapid entrance of ether. Aseptic precautions and washing out the vein after the operation prevented most local troubles, such as thrombosis. He reviewed the state of our present knowledge of infusion of urethrane, hedonal, chloral hydrate, isopral, veronal, medinal, chloramyl, and paraldehyde. In conclusion he enforced the importance of an accurate technique and a judicious selection of cases. Persons with a high blood pressure were unsafe for this method.

A carefully considered report followed by Dr. Z. MENNELL (London) upon

#### *Intravenous Hedonal Infusion.*

After considerable experience he was led to regard this drug as one of value for special operations such as those upon the brain, but extremely dangerous unless employed by those who possessed a full knowledge of its action and peculiarities, since during its use the ordinary warnings and guiding signs relied upon by anæsthetists were absent or masked. The first lesson to learn was to limit the dose. When the skin reflex failed—i.e., when the patient ceased to respond to skin trauma—the dose was too great and danger might be apprehended. An improved form of Mr. C. M. Page's apparatus was shown and the technique of the induction was described. Hedonal infusion seemed to be contraindicated in any operations in connexion with the air passages, the danger being asphyxia arising through the loss of the laryngeal protective reflex, and also in persons with a high blood pressure. Upon the other hand, operations on the neck, intracranial

operations, and those upon the upper abdomen were rendered more easy when this method was employed.

Professor KÜMMEL, whose work in regard to intravenous etherisation is well known, spoke warmly in favour of it, and stated that a prolonged experience had convinced him of its use in appropriate cases as of its dangers if employed for patients for whom it was contra-indicated.

One of the most interesting of the discussions was that opened by Professor S. J. MELTZER (Rockefeller Institute, New York). He entered at length into the physiology of

*Intratracheal Insufflation,*

and pointed out that the material diminution of the dead space between the pulmonary alveoli and the source of air-supply obviated *pro tanto* the necessity for respiratory movements. The due carrying out of pulmonary circulation, the emptying of the returned blood and the filling of the heart, need not be interfered with by the method. Although some degree of plus-pressure within the pulmonary air space, if made continuous, would eventually produce this effect by introducing a regular interrupting apparatus, the plus-pressure could be systematically lowered and the circulation maintained. For animals—and all his preliminary work had been undertaken by a long series of remarkable experiments carried out by a simple apparatus—this interrupter was not essential, nor was warming of the incoming air and ether vapour necessary, but for human patients this last was desirable. In intratracheal insufflation the patient was under an artificial respiration, the incoming air being laden with just so much of the anæsthetic as was necessary to produce the third degree of narcosis. The failing power of the function of respiration incident to all powerful anæsthetics was thus compensated by the method; while owing to the increase of intrapulmonary pressure a continuous outrush of expiration by the side of the catheter (which, introduced into the trachea, carried in the ingoing air and vapour) precluded the possibility of foreign matter or liquid entering the air passages so long as insufflation was proceeding. The mucous membrane of the trachea did not resent the introduction of the catheter; indeed, Professor Meltzer considered inhalational anæsthesia unnecessary as a preliminary to the method. The safety of the method in the hands of those who had mastered the technique had been proved both by experiment and by clinical observation of thousands of cases. Its dangers—and deaths had followed its use—were due to errors in detail or the absence of a safety valve. This was an essential to avoid excessive intrapulmonary pressure—a peril which could hardly arise when a manometer and pressure valve were interpolated in the circuit.

Dr. C. A. ELSBERG (New York), with whom Professor Meltzer associated himself and to whom he gave credit for the application of the method to human beings, dwelt upon the practical side of the question.

Mr. H. E. G. BOYLE (London), Mr. R. E. KELLY (Liverpool), Dr. F. E. SHIPWAY (London), and Dr. NAGLE (Montreal) described apparatus (that shown by the last named being the invention of Dr. Janeway of New York), and expressed their warm approval of the method in appropriate cases. It produced an excellent anæsthesia which was well under control, facilitated the manipulations of the surgeon, and lessened or avoided all deleterious after-effects. All referred to the technique required for introducing the intratracheal catheter, some advocating a direct illumination, others dispensing with the lamp for this purpose and relying upon simple inspection and the tactile sense of the finger when the epiglottis was drawn forward. A demonstration of these apparatus and Dr. Ehrenfried's shown by the PRESIDENT added to the interest of the discussion, in which many speakers took part.

Mr. H. M. PAGE (London), in the absence of Dr. J. M. FLINT (New Haven, U.S.A.), who was the official reporter, described the method of nasal anæsthetisation by the use of nasal tubes. After rehearsing its history he mentioned that this route—i.e., the introduction through the nasal cavities of one or two catheters or tubes so that their free ends hung above the glottis while the pharyngeal cavity was shut off from the buccal space—had been used for the introduction of nitrous oxide, ethyl chloride, ether, or chloroform and had proved of great value in the type of cases for which it was adapted. In some instances the ingoing air and vapour were warmed, but this was not done by all. Many special apparatus had been suggested, such as that of Mr. Souchon. Mr. Page had used either an ether-drop method with a funnel over which was stretched gauze and connected with Orile's tubes, or the Vernon-Harcourt inhaler for chloroform again connected with the tubes by a Y piece. Describing his technique he stated that he obtained a light but adequate narcosis with few after-effects and less shock or reflex troubles than were incidental to the usual inhalation methods.

In the afternoon Dr. KARL GAUSS (Freiburg) opened a discussion upon

*Alkaloidal Bodies Used Alone or in Conjunction with General Anæsthetics.*

Further experience with scopolamorphine given to parturient women had convinced him that the method was valuable. He described the technique which is now well known, and believed that if the cases were carefully selected and the mother was kept under constant observation there was little fear of prejudicial effects occurring either to the woman or the child.

Dr. P. L. GIUSEPPE (Felixstowe) had used the method with satisfaction. He laid stress upon the necessity for accurately apportioning of the dose and giving successive doses at regular intervals, and upon the necessity of auscultating the fœtal heart at frequent intervals. For primiparæ this method had in his hands proved of the utmost value.

Dr. W. J. MCCARDIE (Birmingham) dwelt upon the fact that when alkaloids were once introduced into the tissues they could not be withdrawn, so that it was difficult to control their action when they were used by Dr. Gauss's method. This led him to restrict their employment in his practice to cases in which he was giving a general anæsthetic. It was probably true that when several alkaloids were used in conjunction the action of the individual agents was intensified in some ways and lessened in others, although some authorities believed that the net result equalled the sum of the activities of all of the drugs. Bearing this in mind, limitation of dose for each case was desirable. The best time of injection he thought was from three to four hours before inhalation, as by this procedure the full morphine effect had been produced and would lessen as the operation proceeded. The depressing effect of morphine on respiration was a danger, while scopolamine was dangerous when given alone. He thought omnopon, and especially digalen, were safer in this regard. For young children atropine and brandy given by the mouth were useful. He discussed the indications and drawbacks to the method and deprecated the employment of atropine in operations likely to be attended with hæmorrhage as it might increase "weeping."

*Nitrous Oxide and Oxygen in Major Surgery.*

Dr. C. K. TETER (Cleveland, U.S.A.) gave an interesting account of his apparatus, which had been greatly simplified and improved, as well as of his technique in an experience of some thousands of cases. He contended that nitrous oxide was the one anæsthetic which, while producing unconsciousness, did not damage the central nervous system. The method required care, because the anæsthetist was constantly faced by the danger of asphyxia and because muscular relaxation was not easily obtained by its use. Alkaloids given before the administration overcame this last difficulty. The leading principles were: (1) The use of pre-anæsthetic narcotics; (2) the use of pure oxygen—i.e., not air; (3) a definite and even flow of the gases; (4) warming the gases; (5) rebreathing the gases; and (6) positive interpulmonary pressure. He laid great stress upon the third and fourth of these elements, as warmed gases and vapours had their effects considerably enhanced; and rebreathing by increasing the carbon dioxide tension in the blood obviated the dangers of acapnia and diminished the cost of the procedure. Minor degrees of asphyxia were not wholly prejudicial provided the administrator was competent, and they tended to overcome retching, sometimes a troublesome symptom. The fatalities under this method were difficult to analyse, as in some cases more or less ether had been given, and the result was probably due in part to this agent. The limitations of the method were defined. It was not suitable for children under five years of age, for old people whose tissues were degenerated, for strong, vigorous, rough men, or for cases in which complete muscular relaxation was required.

Dr. W. GUY (Edinburgh) and Dr. J. STUART ROSS

(Edinburgh), adopting a different apparatus, were in favour of the method. They preferred to supply oxygen intermittently according to the requirements of the case.

The PRESIDENT then reported upon

*The Dosimetric Method of Giving Chloroform.*

Dr. Buxton's remarks were printed in our last issue at p. 464.

Dr. E. H. EMBLEY (Melbourne) stated that he had found both by experiment and clinically that the commonest danger of induction of anæsthesia by chloroform was syncope. This was caused either (1) by too concentrated a vapour—i.e., over 2 per cent.—or (2) by excessive lung ventilation when even a safe percentage vapour was in use. With a regulating inhaler the first cause was eliminated, and, further, he found that as the activity of the medullary centres was not exalted the second cause did not arise. Syncope, as he had shown, was commonly due to exaltation of the vagus mechanism. This coincided with the period when cardio-vascular depression was commencing. With lower percentage values of chloroform vapour the musculature of the heart and arteries was not unduly affected, and if the undue pulmonary ventilation was prevented the heart escaped from vagal inhibition. If percentage vapour higher than two was in use this inhibition proved fatal. Syncope under ether was rare because the vagus exaltation did not occur, and when a closed method was in use the increased tension of $CO_2$ in the blood increased, and vaso-constriction took place, lessening the danger of vaso-dilatation. The difference between syncope and shock was carefully defined. Excluding pathological conditions, recovery from syncope depended upon the degree in which the heart and vascular musculature was poisoned, and this again was a function of the strength of the vapour and amount of chloroform perfusing the coronary and vasa vasorum systems. Shock, being depression of the arterial vasomotor mechanism, was largely the result of depression of the adrenal activity. When high-tensioned chloroform vapour was used or prolonged administration had occurred the nervous mechanism was depressed, so that the onset of surgical shock found the resistive power of the individual depressed. High venous blood pressure was an important factor in restarting the heart. The post-mortem appearances due to this had misled pathologists into regarding the death as due to asphyxia. The success of inverting the patient in syncope depended upon this increased venous pressure produced artificially. In advanced shock suprarenal and epinine produced more effect than pituitary.

Professor A. D. WALLER (London) gave a demonstration during the discussion by means of his balance chloroform inhaler, and showed the effect upon a cat of higher and lower grade percentage values of the vapour inhaled.

Dr. PAUL REYNIER (Paris) read a paper on Dosimetric Chloroformisation, and demonstrated an apparatus designed to carry out the method.

## SATURDAY, AUGUST 9TH.

*Anoci-association.*

Dr. G. W. CRILE (Cleveland, U.S.A.) advanced his well-known views upon this system,[1] and illustrated his remarks with lantern slides, which showed brain cell changes consecutive to trauma inflicted while animals were anæsthetised by narcotics. Taking ether and nitrous oxide as examples, he contended that under the former anæsthetic, although the patient was unconscious of pain, yet since the blocking of peripheral conduction was incomplete the higher centres of the brain were damaged. This unappreciated damage made for ultimate death through what is commonly designated "shock." With nitrous oxide anoci-association such damage could be obviated, as more complete blocking could be effected. Not only was pain unperceived, but the effects of trauma were no longer transmitted along peripheral tracts to the centre, so producing damage to brain cells. Anoci-association involved the cutting out of all conditions inimical to brain areas. Thus fear, dread, anticipation antecedent to the operation, together with the taking of an anæsthetic, as well as trauma during unconsciousness and post-operative pain with headache and nausea—i.e., the usual phenomena incidental to the stage of recovery—conveyed harmful impulses to the brain, and must, according to Dr. Crile's system, be eliminated. This he proposed to do by training the nurses to call anæsthesia *sleep*, and giving nitrous oxide to the patient in his bed several times before the actual operation, such administrations being regarded by the patient as "treatment." Ultimately complete anæsthesia by nitrous oxide and oxygen consecutively to the injection of alkaloids was obtained and the patient taken from his bed to the operating theatre. Dr. Crile described his technique in two types of operation, one abdominal and the other for removal of the thyroid in a case of exophthalmic goitre. Each layer of tissue is injected with novocaine, gentle handling being carefully practised. In the case of abdominal operation the peritoneal tissues are infiltrated with urea-hydrochloride and quinine to obtain blocking which persisted for days after the completion of the operation. The patient is then taken back to his room, anæsthesia being maintained. On awakening he finds everything unchanged, feeling no pain and no after-effects, his thoughts do not revert to the operation, and his recovery is unprejudiced by psychic or operative shock. Dr. Crile assured his audience that his clinical experience since he has worked out the anoci-association system goes far to prove the correctness alike of his views and of his technique.

In the further discussion of the subject some speakers were not wholly convinced that success is possible in all cases—e.g., in neurasthenia and in great vital depression.

Mr. V. WARREN LOW (London) saw a difficulty in the great expense involved, and Mr. TYRRELL GRAY did not accept Dr. Crile's statement that it was possible to block brain-seeking impulses by the use of analgesics. Such a system needed the closest of correlation between the surgeon and the anæsthetist, one not always easy to obtain, especially as the latter was restricted to the use of nitrous oxide, while the former demanded a complete muscular relaxation.

Dr. FLEMMING was not altogether in accord with Dr. Crile. The changes in the brain cells were probably a transient condition, and being in the cerebral tissues were unlikely to be due to peripheral stimulation.

The PRESIDENT pointed out that it was difficult in this country, and probably was so in other countries, to gain the requisite control of the patient, and more especially of his friends, which was necessary in order to keep them all in ignorance of the date of the operation. Nor was it possible in most cases to induce the patient to pay the fees necessary if an anæsthetic was to be repeated several times before the actual operation took place.

*Acapnia.*

Professor YANDELL HENDERSON (Yale University Medical School, U.S.A.) reported on this subject and supported his well-known contention that many of the deaths under anæsthetics are due to the condition termed acapnia, that is a depreciation of the carbon dioxide tension in the blood. He reviewed with singular force and lucidity the current views of shock. Pain-shock which affected the higher centres was abrogated by general anæsthesia; there were, however, effects induced by excitement of the nerve centres below the level of consciousness, especially those in the medulla oblongata controlling the vegetative functions of the body which unless parried made for shock as a post-operative effect. Shock, he said, is not over-fatigue of the vasomotor centres; interference with the function of systems other than the circulatory and an excessive secretion of the adrenals produce it, while a pregnant cause of it is hyperpnœa, caused by fear and other emotion or by irritation of peripheral nerves. This excessive respiration lowered the $CO_2$ content of the blood and a state of acapnia would spring into existence. When the store of $CO_2$ was lessened the respiratory centre no longer acted, its normal excitant was withdrawn, but the apnœa arising was not due to hyperoxidation, and its development threw the patient into grave danger. Light narcosis, especially ether narcosis, brought this about, and if from any cause the anæsthetic was changed for chloroform sudden heart failure ensued. The danger of a prolonged period of induction was the generation of acapnia, and for a like reason an intermittent system of anæsthesia was open to objection. Experiments and clinical observations were adduced corroborative of the speaker's premiss, and suggestions for obviating acapnia due to anæsthesia closed a remarkable and interesting report.

Mr. TYRRELL GRAY advanced at some length the reasons which led him to take views of the causation of shock not wholly in harmony with those of the preceding speakers.

[1] See THE LANCET, July 5th, p. 7.

He in collaboration with Mr. Leonard Parsons, had formulated certain views on shock, and he appealed to a large number of tracings showing the respiration, the action of the heart, and the blood pressure under conditions which were those of shock, in support of his contentions. He referred to the pressor and depressor fibres to the vasomotor centre. Stimulation of the former caused vaso-constriction and acceleration of the heart; of the latter vaso-dilatation with inhibition of the vaso-constriction. Depressor effects only gained dominance during pressor fatigue. He pointed out, in commenting upon Dr. Crile's contention of danger to cerebral cells, that the cells were cut off by the synapses, and averred that no blocking was possible unless spinal injections were made. His experience led him to believe that strychnine, so far from being dangerous in shock, was the only reliable drug in its treatment.

Mr. J. D. MORTIMER (London) believed that local analgesia was often dangerous, especially for nervous people, and led to grave after-shock and even an upset of the mental balance.

Dr. W. S. DICKIE (Middlesbrough) had met with grave shock symptoms after the intradural injection of stovaine.

### MONDAY, AUGUST 11TH.

*Post-operative Effects and Toxæmias Associated with Anæsthetics.*

Dr. WILLIAM HUNTER (London) gave a succinct account of the pathogenesis of toxæmia following the use of anæsthetics (delayed chloroform poisoning—acidosis). After describing the clinical symptoms, he pointed out that these were probably due to the faulty methods of preparation of the patient prevalent. The starvation led to lowering of vitality of tissues, so that metabolism was imperfectly performed. The liver suffered most; not only was it compelled to obtain carbohydrates by breaking up its own cells, but it no longer purified the blood passing through it, so that toxins were poured into the general circulation and produced the characteristic toxæmia. The line of treatment was to protect the liver by supplying carbohydrates and avoiding depression of the hepatic functions.

Dr. L. GUTHRIE (London), while accepting Dr. Hunter's pathology, did not share his optimism as regards the success of a carbohydrate treatment. He had met with children who were apparently healthy, but who after trivial operations succumbed to post-operative toxæmia. He could not exonerate the anæsthetic from its share of blame, even though it proved to be the last straw. He considered that the germane condition of cyclical vomiting in children might be due to destruction of some antitoxins in the organism.

Dr. W. FREW (London) gave his experience in the Children's Hospital, and believed that the condition was due to a breakdown in the process of assimilation.

Dr. J. T. GWATHMEY (New York City) described his method of anæsthesia by means of oil and ether slowly introduced into the rectum. The present was a preliminary report, and referred to his experiments upon animals and some clinical results. Using Carron oil, he found that until over 50 per cent. ether was used no anæsthesia resulted; 75 per cent. answered well for human beings.

### TUESDAY, AUGUST 12TH.

Dr. J. F. W. SILK (London), in the absence of Dr. DUMONT (Berne) reported upon the

*Selection of Appropriate Agent and Method for Producing Anæsthesia.*

In a most interesting address he emphasised the necessity of suiting the agent and method to the individual case. The preparation and general treatment of the patient having been discussed, he submitted that routine methods needed revision. Selection of method was limited in London hospitals both by the absence of costly apparatus such as those of Dr. Teter and Dr. Elsberg, and because it was necessary for the anæsthetists to teach students simpler methods. He gave his personal views on the selection of general anæsthetics. Local analgesia he considered was hardly out of its stage of trial.

The adjourned discussion on Open Ether was resumed by Dr. GWATHMEY, who did not accept all Dr. Ferguson's views. He described his vapour method and apparatus, and was followed by various speakers, the PRESIDENT closing the discussion.

Papers by Dr. CARLO OLIVA (Genoa) on Variations du Contenu en Adrenaline des Capsules Suprérenales après l'Anesthésie, by Dr. DESCARPENTRIES (Roubaix) on Intramuscular Injection of Ether, by Dr. E. CAILLAUD (Monte Carlo) on his method of Anæsthesia by known quantities of ethyl chloride and chloroform, and by Professor F. HOBDAY descriptive of his chloroform apparatus, were read, and excited some interesting discussion. The various apparatus referred to in this report were shown and demonstrated in a special museum attached to the subsection.

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## SECTION VIII.—OBSTETRICS AND GYNÆCOLOGY.

### SATURDAY, AUGUST 9TH.

*President*, Sir FRANCIS H. CHAMPNEYS, Bart. (London).

Several papers were read at a short session on this day.

Professor J. O. POLAK (New York) communicated his views on

*The Management of the Interior of the Uterus in Post-Abortal and Post-Partum Infection.*

He pointed out that nature closed the uterine sinuses by the formation of blood-clot, and that this was a conservative and protective process. A study of nearly 2000 cases of infection had demonstrated that the endometrium should never be curetted in streptococcic infection, and that to curette the placental site was to court septic thrombophlebitis. When the inside of the uterus was not disturbed there was little tendency for the infection to spread to the parametrium or peritoneum. Further, when the invasion of the lymphatics or blood channels occurred *viâ* a tear in the cervix, intra-uterine treatment was obviously useless. He had found streptococcus in pure culture in from 30 to 40 per cent. of cases, and in mixed culture in from 60 to 70 per cent. The obstetric wound at the placental site should be regarded like a wound in any other location. The protective granulation zone should at all times be carefully preserved. It was well known that the danger from a curette increased as the period of pregnancy advanced, and no one present had ever curetted a septic uterus without having the procedure followed by an immediate rise in temperature. The essentials of treatment were (1) the promotion of drainage; (2) the stimulation of uterine contraction; and (3) the preservation of the protective granulation tissue. The speaker narrated the excellent results that had followed his adoption of this technique.

Dr. O. TUSZKAI (Budapest) enlarged on

*The Indications for Inducing Premature Labour in Cases of Excessive Vomiting and of Heart Disease.*

He commented on the great difficulty of treating such cases, and briefly mentioned the various theories accounting for hyperemesis. He would not interrupt the pregnancy in this latter condition unless albumin appeared in the urine, the pulse-rate increased, and there was a rapid loss of weight and diminution of the chlorides in the urine. In several cases of pregnant women suffering from heart disease he had found that, when want of compensation began, the variation in the pulse, which had previously disappeared owing to the cardiac hypertrophy of pregnancy, reappeared again as a sign of subsequent dilatation. Induction of labour was less commonly necessary for these cases than many seemed to think.

Professor J. M. MUNRO KERR (Glasgow) created interest by his careful *résumé* of

*Plastic Operative Treatment for Malformations of the Uterus and Vagina.*

He treated the conditions found under four headings: 1. Müllerian ducts fused; arrested development of the uterus. Cases were indicated where operation offered no hope of improvement, and thereafter various operations, mainly abdominal, for atresia of the cervix were described. Excision was favoured. 2. Müllerian ducts fused; septum present. Excision of the septum from the vagina was recommended. 3. Müllerian ducts imperfectly fused. Where the depression at the fundus was deep (uterus cordiformis) the speaker favoured Strassmann's cuneiform excision by the abdominal route. It was rarely necessary to operate on uterus didelphys, but where complications appeared excision of the affected horn was advisable. 4. Vagina more particularly affected. Operations were rendered more satisfactory in difficult cases by a thorough exploration per abdomen.

### MONDAY, AUGUST 11TH.

Dr. J. RIDDLE GOFFE, at the afternoon session, in a paper on

*The Biochemical Function of the Endometrium in Menorrhagia and Metrorrhagia,*

confined himself to such cases as showed no pathological lesion on clinical examination. The hæmorrhage from these cases showed delayed coagulation, and the generally accepted belief was that this deficiency of coagulating power was a local one brought about by some factor, possibly an antithrombin in the endometrial and subendometrial tissues. He had found that the blood from the uterine artery coagulated normally, but failed to do so when mixed with blood from the endometrial surface. There was no evidence of a lack of any essential for coagulation, but rather of the addition of an antithrombin. After referring to the close association now known to exist between the menstrual function and certain ductless glands, he suggested that ovarian and thyroid extracts should supersede the curette, ergot, and pituitary extracts. Rest in bed and firm packing of the vagina and uterus were advisable.

In discussion Miss MCILROY endorsed Dr. Goffe's remarks. She had found an excess of calcium salts in menstrual fluid, and emphasised the close association existing between the ovaries and thyroid and the menstrual function. She hinted also at a syphilitic taint in some of these cases.

Sir FRANCIS CHAMPNEYS considered that many cases of undue hæmorrhage in young girls cured themselves. He strongly advocated swabbing of the uterine cavity with fuming nitric acid in lieu of hysterectomy.

*Vaginal Hysterectomy.—Exhibition of Specimens, &c.*

Dr. R. L. DICKINSON (Brooklyn) narrated his Simplified Technique for Vaginal Hysterectomy. He advocated two catgut suture-ligatures instead of a tangle of interrupted ties.

Professor NAGEL (Berlin) demonstrated a beautifully injected Puerperal Uterus. The tortuous and convoluted branches of the uterine arteries were well seen. Conclusions as to the origin of the lower uterine segment were developed from the specimen.

Dr. W. R. JOHNSTONE (Edinburgh) showed a Cast and Coloured Photomicrographs of an Early Ovum which he believed to be of uniovular twins. The age was calculated at 15 days. The nature of a double layer of epithelium covering the vesicles was not quite clear. The lantern demonstration was much admired.

### TUESDAY, AUGUST 12TH.

The last session of this section was unfortunately rather poorly attended, and it was to be regretted that many of the foreign members who had indicated a desire to take part, and whose contributions were eagerly looked forward to, did not put in an appearance. The subject for discussion was an important one—

*Cancer of the Uterus (Cervical and Corporeal), its Operative Technique and Results.*

A resolution of sympathy for Professor WERTHEIM in his recent accident was unanimously passed, and thereafter Dr. W. WEIBEL (first assistant to Professor Wertheim in Vienna) reported to the section in his stead. Some recent modifications of his technique for the abdominal radical operation in cervical cancer were announced. The most important of these was the plugging of the vagina beforehand with gauze soaked in 5 per cent. silver nitrate solution. The peritoneum should be completely closed, and if resection of a ureter proved necessary, and implantation into the bladder (or, in some cases, into the vagina or rectum) were impossible, excision of the kidney was the best procedure. There had been no necrosis of the ureter in the last 214 cases. In all 714 cases were reported with a mortality of 16·6 per cent. 186 were free from recurrence after five years, and of these 14 had showed invasion of the regional glands at the time of operation. These cures represented 53·3 per cent. of all cases after excluding primary and intercurrent mortality. His operability rate worked out at 50 per cent. He recommended the same operation for cancer of the body, for in these 16 per cent. showed gland invasion.

Professor PROUST (Paris) advised a preliminary ligation of the internal iliac arteries, external to the ureters and as high up as possible.

Dr. F. J. MCCANN (London) had used silver nitrate for disinfection of the vagina for four years. He was against the curette as a preliminary step, and had not had a single case of infection of the abdominal wound. In 63 cases of cervical cancer he had only lost three cases. The first stage of the operation should be the separation of the bladder from the uterus. A subperitoneal gauze drain was advisable in cases where hæmostasis was not absolute, but it should not be left in for more than 48 hours. He was strongly against any operation in the advanced cases, and he favoured the complete operation for cancer of the body. In 28 of these cases he had had only one death.

Dr. COMYNS BERKELEY (London) considered that life-expectation should be held in mind as well as curability. Dr. Bonney and the speaker performed a very thorough operation, and did not exclude cases that many were disposed to leave alone. Their operability percentage was 63, their mortality 22·5, and as evidence of the serious cases they accepted for operation they found implication of the glands in 33 per cent.

Mr. C. P. CHILDE (Portsmouth) favoured clamp and cautery of the cut borders of the parametrium and vagina; complete hæmostasis was ensured, and ligatures were not necessary.

Dr. R. L. DICKINSON (New York) was alone in suggesting that there might still be a sphere of usefulness for vaginal hysterectomy.

Professor DÖDERLEIN and Professor DAVIS proposed votes of thanks to the officers of the section, who suitably replied.

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## SECTIONS VIII. AND XXII.—JOINT SESSION OF THE SECTION OF OBSTETRICS AND GYNÆCOLOGY WITH THE SECTION OF RADIOLOGY.

### MONDAY, AUGUST 11TH.

*President*, Sir FRANCIS H. CHAMPNEYS, Bart. (London).

The sections met to discuss in joint session the subject of

*Roentgen and Radium Therapy in Gynæcology.*

The discussion, which was a remarkable one in many ways, was listened to by a large and interested audience, and was joined in by nearly a score of speakers, principally radiologists.

Dr. ALBERS-SCHÖNBERG (Hamburg) communicated his results in a paper amplified by carefully tabulated statistics. His report included 46 cases of myomata, 26 of carcinomata, 35 of fibrosis uteri, a short series of menstrual abnormalities, and some cases of pruritus vulvæ; all of these were treated by X rays. Experiments had proved that the rays had a definite deleterious influence on the male and female genital glands. Their influence on myomata, however, was not solely due to ovarian atrophy, but included a direct action on the myomatous stroma. The great percentage of myomata did not disappear under treatment, but the percentage of complete relief from symptoms was a high one. Lasting cure was to be expected with certitude in favourable cases, but a certain number of myomata proved quite refractory; he did not consider that the indications for favourable cases were yet definite. He summed up the general indications for X rays in gynæcology as follows: (1) induction of menopause; (2) removal of post-climacteric bleeding; and (3) soothing of menstrual difficulties at all ages, *if possible* without sterilisation. He preferred to use as few rays as possible and to regulate by a varying exposure. Hæmorrhage might increase after the first or second dose, but later decreased.

Dr. FOVEAU DE COURMELLES (Paris) made it clear in his opening sentences that neither radium nor X rays must be regarded as a panacea. He had treated fibroids for the past ten years with X rays, and when applied discriminately was convinced of their great utility. Hæmorrhage and pain were usually the first to go, but young fibromata, even when of large size, yielded rapidly. The action was much more rapid about the menopause; failure occasionally occurred even after a preliminary improvement. Contraindications were: (1) polypi and (2) degenerating tumours. Discussing radium, Dr. de Courmelles found it possible to give a very favourable report in malignant disease. Of 100 cases of inoperable carcinoma 70 per cent. had improved for from 1–4 years, the mobility of the uterus had increased, hæmorrhage and leucorrhœa had diminished, and general improvement had rapidly appeared. He applied 1–5 cgr. of pure radium

to the neck of the uterus for 6–24 hours. He hoped that bad as well as good results would be made public.

Professor P. KROEMER (Greifswald) narrated the excellent results obtainable with mesothorium in the treatment of malignant disease.

Professor DÖDERLEIN (Munich) enthusiastically supported the claims of radium and mesothorium, and showed lantern slides, in natural colour, of cases in process of treatment. His emphatic stand greatly impressed his hearers.

Dr. JACOBS (Brussels) preferred radium to radical operation in extensively malignant cases. He used massive doses and had had cases without recurrence for from 3–3½ years.

Dr. WALTER TATE (London) had not yet seen post-operative recurrences disappear under the treatment.

Professor W. NAGEL (Berlin) gave his patients every opportunity of X ray treatment by experts, but was not greatly impressed by the results. He gave the advice to the section to "wait and see."

The discussion as a whole was very favourable to non-operative treatment, but Dr. H. R. SPENCER (London) emphasised some of the dangers. He considered that every case treated should be at the same time under the care of a gynæcologist, and pointed out the possibilities of degeneration or malignancy, and the disadvantage of sterilisation.

## SECTION IX.—OPHTHALMOLOGY.

### FRIDAY, AUGUST 8TH.

*President*, Sir ANDERSON CRITCHETT, Bart. (London).

Professor PRIESTLEY SMITH (Birmingham), Professor LAGRANGE (Bordeaux), and Lieutenant-Colonel R. H. ELLIOT, I.M.S., opened a discussion on

*Glaucoma Operations, with Special Reference to the Comparative Results Attained by Iridectomy and its Recent Substitutes.*

Professor PRIESTLEY SMITH gave an account of the replies he had received in response to an inquiry issued to British ophthalmic surgeons on their present practice. There was a concurrence of opinion on the advantages of iridectomy for acute glaucoma. In chronic disease the results of this operation were uncertain, often poor. For this reason there had been a wide adoption of various methods of sclerotomy and sclerectomy, and these were justified by their results. Whilst the glory of the achievement of von Graefe in the discovery of iridectomy could never be dimmed, there was a great advance from the work of Lagrange, Herbert, Holt, Freeland Fergus, and Elliot. They had shown the possibilities of securing drainage through the coats of the eye free from complications of iris adhesions. What was now wanted was better knowledge of the various forms and stages of the disease so that they could the better select their procedure.

Professor LAGRANGE gave an account of the manner in which he was led to initiate his method of sclerotomy, and gave the comparative results of this and other modifications in 137 cases.

Lieutenant-Colonel ELLIOT maintained that trephining far forward was at once the easiest, safest, and best method of securing the needed drainage. The wound was in shape, size, and position best adapted to the end in view, and it had proved admirably successful in 900 cases operated upon in India.

Dr. J. E. WEEKS (New York) said that he had practised all the recent new operations and found variable success. There was a tendency to a return of tension, and even a trephine hole could be filled up with scar tissue.

Professor E. VON GRÓSZ (Budapest) pointed out the advantages of iridectomy without removal of the sphincter in acute glaucoma.

Mr. H. HERBERT (Nottingham) said that there were dangers in too free leakage—risks of sepsis, iritis, hæmorrhage, and injury. In his opinion slerectomy did too much and sclerotomy too little. The former was good for some eyes, particularly in secondary glaucoma and blind eyes; the latter in thin sclerotics. He thought that none of their present methods would be the one of the future.

Professor AXENFELD (Freiburg) had seen cases of late infection after sclerotomy.

Mr. ARNOLD LAWSON (London) said that it was too early to determine the exact worth of these operations, but at the present his preference was for trephining. The iritis seen after the operation was mild and innocuous.

Mr. R. R. CRUISE (London) pointed out that after trephining the conjunctival bleb was often limited by the scar of the incision, and showed how he had secured speed of the drainage by burying silk threads.

Dr. J. O. MCREYNOLDS (Texas) said that the sclerotomy could be quite well done with the knife without the complication of a special trephine.

Mr. A. F. MACCALLAN (Cairo) found that trephining was complicated in Egypt by the presence of trachoma scarring; notwithstanding, the method succeeded.

Mr. G. T. BROOKSBANK JAMES (London) detailed a method of sclerotomy by which a thin slip of sclera was turned back so as to keep the conjunctiva from healing over the wound.

Dr. W. B. MARPLE (New York) said that he had had good results with Lagrange's method, and also with the trephine. In the latter he took steps to prevent pressure on the globe by hooking up the part to be resected.

Professor R. A. REEVE (Toronto) said that in his experience Elliot's method of trephining succeeded where others did not. He was under some apprehension of later infections, but so far he had seen none.

Mr. E. TREACHER COLLINS (London) said that anatomical research had shown that the essential feature of a successful operation was the production of a permanent opening in the sclera. This was true of many iridectomies where the iris was incarcerated, but that was dangerous. Herbert had shown that such a passage could be secured without inclusion of the iris. It probably depended on the thorough opening up of the endothelium. If the conjunctiva were buttonholed the epithelium dipped down and closed the track.

Mr. STEPHEN MAYOU (London) described a method of lymphangioplasty performed independently by Zorab and himself. He had done 15 cases. At the present he was the more favourable to trephining.

Dr. G. MACKAY (Edinburgh) discussed the advantages of paracentesis of the posterior chamber before iridectomy. His practice was to take the blood pressure and intraocular pressure before operating, and to bleed the patient immediately before operating if the blood pressure was high.

Dr. ADOLPH BRONNER (Bradford) thought that trephining was easier and better than iridectomy for many cases. There were dangers, however, from late infection, undue and progressive softening of the eye, and lens degeneration.

Mr. T. HARRISON BUTLER (Coventry) spoke of the advantages of Holth's punch operation over trephining; there was with this method no risk of iris prolapse.

Mr. G. H. POOLEY (Sheffield) said that he continued to use a modified Lagrange operation with the best results. In 70 cases, some lasting three years, there had been good filtration, no loss of field, and better vision.

Mr. N. BISHOP HARMAN (London) said that trephining took no account of the variety of eyes and sclerotics met with, and these were many. The method could not be modified to suit the case. Herbert's small-flap operation could be varied considerably, and with the twin-scissors it was easy to perform, safe, and comfortable to the patient.

Colonel W. G. PRIDMORE, I.M.S., asked if trephining should be performed as a prophylactic measure where glaucoma threatened.

Mr. A. B. CRIDLAND (Wolverhampton) said that he had done Lagrange's operation over seven years and was well pleased with it. There was the advantage that no instruments were required other than those they used every day.

Professor H. SATTLER (Leipzig), Professor W. STOCK (Jena), Dr. L. GUGLIANETTI (Naples), Professor WICHERKIEWICZ (Cracow), Dr. AVAN LINT (Brussels), and Dr. ADOLPH PAGENSTECHER (Wiesbaden) joined in the discussion.

The PRESIDENT in summing up gave some interesting reminiscences, and the three reporters replied to the various criticisms and questions.

Professor F. FALCHI (Pavia) read a paper on the Treatment of Secondary Cataract, in which he advocated the removal of the opaque membrane by circular incision.

Professor WICHERKIEWICZ and Dr. KARL A. GROSSMANN (Liverpool) spoke, the latter advocating the use of a punch for the excision.

Dr. A. J. BALLANTYNE (Glasgow) detailed some observations with the Schiötz Tonometer for measuring the tension of the eyeball. His observations showed that the normal variation was from 13 to 15 mm. of Hg, whilst in disease

it was from 4 to 96. Comparing the blood pressure therewith he found a general, but not constant, concurrence of the curves.

Professor WICHERKIEWICZ and Professor SCHIMANOWSKI (Kieff) commented on the findings.

Dr. MAGITOT and Dr. J. MARVAS (Paris) contributed a paper on the Rôle of the cells of the Vitreous in the Formation of the Aqueous in the Fœtus, and Professsr FALCHI spoke thereon.

### SATURDAY, AUGUST 9TH.

A demonstration meeting was held in the morning, when Mr. G. A. BERRY (Edinburgh) occupied the chair.

Dr. J. E. WEEKS (New York) showed the method devised by him for the "restoration of the cul-de-sac in contracted orbit." He transplanted a substantial piece of the whole skin from the arm to the orbit. The secret of securing certain grafting was to suture the fold of the skin at the bottom of the groove to the periosteum of the orbit. If that were not done accurately the method failed.

Professor SCHIMANOWSKI, Professor WICHERKIEWICZ, Dr. H. LAUBER (Vienna), Professor FRANKE (Hamburg), Lieutenant-Colonel ELLIOT, and Mr. BISHOP HARMAN commented on the procedure, and Dr. WEEKS replied.

Prof. DE SCHWEINITZ (Philadelphia) read (for Dr. F. H. VERHOEFF, Boston) a paper on the organisms found by him in Parinaud's conjunctivitis, and demonstrated their appearance under the microscope. The microbes were found in clumps and tended to form rosettes. Separately they were long threads slightly curved, studded with large bosses, which stained intensely with modified Gram's stain. No other microbes were found.

Professor B. MÖLLERS (Berlin) spoke of the frequent finding of tubercle bacilli in these cases.

Professor AXENFELD said that the suggestion that these new appearances were due to a streptothrix was a possible one, but the features were not confined to streptothrix, but were to be found in the tubercle, diphtheria, and even xerosis organisms. The final test must be by successful inoculation.

Professor STOCK showed an improved form of protective goggles.

Dr. LESLIE BUCHANAN (Glasgow) demonstrated the Minute Anatomy of the Ligamentum Pectinatum. The conclusion was that this structure in man and ape was the tendon of the greater part of the ciliary muscle, and that it terminated in the cornea between Descemet's membrane and the substantia propria. In the dog, sheep, and ox the arrangement was not identical on account of the cavernous structure of the ligament.

Mr. R. A. GREEVES (London) commented on the sections.

Mr. GREEVES demonstrated sections showing the occurrence of Russell's bodies in the various tissues of the eye. These were formerly thought to be cancer parasites, but were now proved to be hyaline degeneration products the result of chronic inflammation.

Dr. A. MAITLAND RAMSEY (Glasgow) showed some beautiful direct colour photographs of external diseases; Dr. MACKAY, water colour drawings; and Dr. MARPLE (New York) and Dr. FENTON (Philadelphia), different forms of electric ophthalmoscopes.

### MONDAY, AUGUST 11TH.

Professor CARL V. HESS (München) and Mr. J. H. PARSONS (London) opened a discussion on

*Affections of the Eye Produced by Undue Exposure to Light.*

Professor HESS dealt with the many causes of symptoms of photophobia, and discussed the reasons for the marked spasm of the lids. Since this spasm was present whether or not the eye were exposed to the light, he concluded that the photophobia was a purely secondary symptom, and that all the evidence pointed to the spasm being the effect of an irritation of the nerves of the cornea and iris which themselves were not sensitive to light.

Mr. PARSONS considered the factors in the causation of industrial disorders such as glass-blowers' cataract, and accidents such as snow blindness. He suggested the term "photophthalmia" for the lesser forms of surface irritation due to excessive light effects. He considered the noxious elements of light to reside principally in the short radiations such as the ultra-violet rays.

Mr. ARNOLD LAWSON said that temporary blindness, not different from eclipse blindness in its characters, was occasionally caused by the prolonged use of prism binoculars in sunshine. He had seen cases in army officers, but the symptoms passed off in some months.

Dr. F. W. EDRIDGE-GREEN (London), speaking of the different effects of coloured lights, concluded that the most irritant rays were the red, and that protective glasses should be designed to cut off these.

Mr. BISHOP HARMAN called attention to the fact that a great deal of the prevalent asthenopia and defective vision was the direct effect of the altered conditions of modern lighting. There had been introduced new lamps of high specific intensity, and these were used in an altogether unsafe method. High-powered lights were exposed unshaded to the eye. The fault was not in the nature of the light, but in the manner of its presentation; properly shaded, the new lights were excellent. There was much more danger in the naked exhibition of modern lamps than in the wholly problematical effects of ultra rays.

Professor PRIESTLEY SMITH considered that the orbicular spasm seen in corneal ulcers was due to an over-irritated and exhausted nerve centre.

Dr. MACKAY discussed the possible scientific basis of moon-blindness, and instanced a case where starlight was averred to have caused scotoma.

Mr. BERRY thought that photophobia was due to the irritation of an ill-adapted retina. He considered the old smoked glass a better protective than euphos glass.

Professor AXENFELD dealt with the causation of spring catarrh, and instanced experiments to show that exposure to air was the determining factor.

Lieutenant-Colonel ELLIOT, I.M.S., said that cyanopsia was a very common symptom after the removal of cataract in India, and that the fundus was seen to be unusually lacking in pigment in such cases.

Mr. E. NETTLESHIP (London) said that the occurrence of moon-blindness was probably more dependent on general health conditions than any effect of the light.

Dr. CRIDLAND drew attention to the early onset of cataract in the puddlers and rollers of ironworks; heat as well as light were, he thought, determining causes. "Heat-workers' cataract" should be recognised.

Dr. A. GREENE BRINTON (Johannesburg) said that similar conditions were found amongst gold assayers, also in drill sharpeners. Glare-photophobia, he thought, had no mystery in its origin—it was due to uncorrected astigmatism; correct that, and relief was obtained.

Mr. F. RICHARDSON CROSS (Bristol) made an appeal for evidence in view of an inquiry into the illumination of factories.

Dr. A. SHANZ (Dresden), Dr. E. SULZER (Paris), and Professor MARQUEZ also spoke, and Professor HESS and Mr. PARSONS replied.

Dr. F. TERRIEN and Dr. DAUTRELLE (Paris) contributed a paper describing their observations on the coagulation of the aqueous humour.

Dr. GROSSMANN introduced the subject of

*Sight Tests for Sailors.*

He said that standardisation of tests for international purposes was required. Tests for form, colour, and light sense were required. The present practice was grossly inadequate, seeing that there were no vision tests for look-out men.

Mr. T. H. BICKERTON (Liverpool) said that common sense and not theoretic efficiency must be brought into their councils. To demand perfect vision for the sailor was unnecessary, for a ship was not a test-card but an object readily recognised to a man who has half vision.

Dr. EDRIDGE-GREEN supported Dr. Grossman.

Dr. NETTLESHIP agreed that in theory it was well to standardise the tests, but doubted the possibility.

Dr. EDRIDGE-GREEN read a paper on

*The Detection of Colour-blindness from the Practical Point of View.*

He said that any test must imitate the conditions of work:

therefore red, white, and green must be exhibited under conditions that simulated those of distant lights. Also, since the man had to mentally name the colour and state a fact to another, he should be required to name a test colour.

Mr. NETTLESHIP defended the lantern test of the Board of Trade, for he said the exhibition of two lights simultaneously was in imitation of the ordinary conditions at sea.

Mr. C. DEVEREUX MARSHALL (London) said that as a seaman he could assure the meeting that it was rarely that a look-out had two lights in view at once in the manner suggested by Mr. Nettleship. He had to recognise a single light in the great majority of cases.

Dr. BERRY supported the efficiency of Holgren's tests and the value of a matching as against a naming test.

Dr. EDRIDGE-GREEN replied.

The following papers were read:—On the Treatment of Eye Disease by Radium and Mesothorium, by Professor W. KOSTER (The Hague); Light Therapy in Eye Diseases, by Dr. FRITZ SCHANZ (Dresden); on Temporary Blindness due to Ergot Poisoning, by Dr. JULIUS FEJÉR (Budapest); and on the Extraction of Non-magnetic Foreign Bodies from the Eye, by Dr. H. LAUBER (Vienna).

### TUESDAY, AUGUST 12TH.

Professor Dr. V. MORAX (Paris) and Dr. AUREL V. SZILY (Freiburg i/Br.) opened a discussion on

*Anaphylaxis in its Relation to Ophthalmology.*

Dr. MORAX, after reviewing the variant opinions held by workers in the subject, concluded that they could not accept it as in any way proven that the conditions resulting from the injection of serums were the equivalent of human affections of the eye, although the experiments were similar in nature and result to the effect seen in serum therapy. They could admire the ingenuity of the supporters of the theory that these phenomena accounted for the facts of sympathetic ophthalmitis and interstitial keratitis, but there was little solid basis for their conclusions.

Dr. SZILY detailed experiments which showed the production of corneal, iris, and choroidal conditions by local infections of serum which much resembled well-known ocular diseases.

The papers were discussed by Professor AXENFELD, Dr. E. FRIEDBERGER (Charlottenburg), and Dr. H. DE WAELE (Gand); and the PRESIDENT summed up with the remark that in their present state of knowledge it would be well to express their views with caution, otherwise they were in danger of destroying the justifiable confidence of the public in serum therapy.

Mr. GEORGE COATS (London) read a paper on Infarction of the Posterior Ciliary Arteries, and said that the pathological appearances of these rare cases explained clinical conditions formerly difficult of appreciation.

Mr. BISHOP HARMAN read a paper on

*The Results of the First Hundred Squint Cases Operated upon by the New Method of Subconjunctival Reefing and Advancement,*

and gave a demonstration of the operation. He showed that by this new operation precision of effect and regularity of result were better insured. Of the cases, 85 were found to be satisfactory after a long interval and the balance sufficiently good to be readily capable of final correction.

Dr. F. E. TODD, commenting on the procedure, said that his experience of similar methods was good, and there were points in the new operation to be copied.

Papers were read as follows:—On the Correction of Bi-astigmatism, by Professor MARQUEZ; on the Causation of Shortsight, by Professor LEVINSOHN (Berlin); Experiments in Paralactical Phenomenon in the Perception of Depth, by Dr. RICHARD CORDES (Bonn); and the Treatment of Spring Catarrh of Bulbar Variety by the Correction of Tonsillar Affections, by Dr. GREENE BRINTON.

The following resolutions were moved by Dr. GROSSMANN, seconded by Dr. EDRIDGE-GREEN, and carried unanimously:—

1. That an international committee be appointed by the council of the section to report on a suitable standard of form, colour, and light sense tests in the interests of safety at sea.

2. That this committee report on what they consider and recommend as the suitable tests for carrying out the necessary examination as required by the above.

## SECTION XIV.—UROLOGY.

### THURSDAY, AUGUST 7TH.

*President*, Professor E. HURRY FENWICK (London).

The PRESIDENT, in the course of his introductory remarks, welcomed the foreign delegates with a few well-chosen words. He then reviewed the progress of urology in recent years, laying special stress on the introduction of the cystoscope by Nitze and the discovery of the X rays by Roentgen. These two discoveries, he said, shed a flood of light over urology. To one or both of these advances he traced the recent improvements in our methods of diagnosis and of treatment. The modern urologist was no longer groping in the dark, but could approach his patient with an exact knowledge of the pathological condition he had to deal with, and armed with scientific methods of treating it. In the advancement of medical science as a whole, although urology had received much from other branches she was able to make in return valuable additions to their store of knowledge.

Professor H. KÜMMEL (Hamburg) opened the discussion on

*The Diagnosis and Treatment of Early Malignant Disease of the Prostate.*

His paper was an accurate and painstaking review of the present-day knowledge of the condition. He first gave statistics showing the relative frequency of cancer of the prostate as compared with cancer elsewhere, then he compared the cancerous with the benign enlargements of the prostate. He classified malignant disease of the prostate according as it developed in hypertrophied or non-hypertrophied glands, and showed that in these two classes the symptomology was different. In the former class the symptoms were those of the ordinary senile enlargement of the prostate and the diagnosis could only be made by examination; in the latter they were due to the carcinoma alone. The early symptoms were frequency of micturition associated with difficulty and loss of projection of the stream. Hæmaturia was less common in malignant disease than in the ordinary hypertrophy of the prostate. In dealing with this subject he pointed out that occasionally prostatic symptoms may be entirely absent until metastasis had occurred and the condition become inoperable. Professor Kümmel next described the various types one found on palpation, and mentioned the chief points in the differential diagnosis between cancer and adenoma. He then took up the question of treatment. This he considered was entirely surgical, and in early cases an attempt to extirpate the disease should be made. He quoted statistics of the after results obtained by the leading urologists, and showed that well authenticated cases of cure, in one case as long as nine years after operation, had been recorded.

Professor HUGH YOUNG (Baltimore) was the second reporter. He showed that in half of the early cases under his care the only pathological condition present was cancer. In one case of chronic prostatitis he found a nodule of cancer on microscopic examination; while in the remainder cancer was associated with hypertrophy. He then reviewed the symptoms presented by his cases and came to the conclusion that "the symptomology of cancer of the prostate in the early stages is almost identical with that of benign hypertrophy." Next he briefly described the technique of his radical operation for cancer of the prostate. This he had performed six times, one patient died six and a half years after operation, and no evidence of recurrence was found at the necropsy; another was alive and well four years after operation. He then pointed out the value of perineal prostatectomy as a palliative operation in cases that were too advanced for the radical one. In conclusion, he emphasised the necessity of a careful digital examination in all cases that had even the slightest prostatic symptoms. Till this became a routine practice among medical practitioners these cases would rarely be recognised until they were inoperable.

In the discussion that followed, Professor G. GAYET (Lyons) described the operation he performs for extirpation of cancerous prostates. His incision is sickle-shaped; the handle of the sickle was in the perineum, while the blade curved round the anus. This, he claimed, gave much more room than Young's incision. However, his cases seem to have had stricture and sometimes a perineal fistula after the operation.

Mr. J. SWIFT JOLY (London) described three cases he had operated on by Young's method. By taking special care to preserve the compressor urethræ from injury he had given his cases control after a preliminary period of incontinence. (All of Professor Young's cases had partial incontinence.) One of these patients was alive and well two and a quarter years after operation; both of the others died within the first year. He had operated on a fourth case by a combined abdomino-perineal route, but it died of shock.

Dr. H. SCHULLER (Vienna) spoke on the difficulty of diagnosis in these cases.

Dr. O. PASTEAU (Paris) recounted his experience with radium in dealing with cancer of the prostate. He inserted the tube of radium into the prostatic urethra by means of a catheter. One case had been by this means completely cured for three years.

Professor T. ROVSING (Copenhagen) spoke of a case under his care in which a large metastatic tumour appeared in the neck before any prostatic symptoms were present. He said he made use of a modification of Young's operation. Instead of trying to restore micturition through the urethra after resection he made a permanent suprapubic fistula, and afterwards made a very wide resection of the prostate.

Dr. F. WEISS (Budapest) also spoke on the question of diagnosis.

Dr. H. WILDBOLZ (Berne) described his modification of Young's operation. This was designed to secure urinary control after the operation. Out of eight cases two had temporary incontinence, the rest were continent.

Both Professor KÜMMEL and Professor YOUNG replied to the discussion.

### FRIDAY, AUGUST 8TH.

The discussion on the Diagnosis and Treatment of Early Renal and Vesical Tuberculosis was held jointly with the Section of Surgery (Section VII.), and has been already reported under that section.

### SATURDAY, AUGUST 9TH.

The subject for discussion was

*The Diagnosis and Treatment of Hæmic Infections of the Urinary Tract.*

Professor E. BREWER (New York) when introducing the subject pointed out how this condition was only lately recognised. Formerly, hæmatogenous infection was thought only to take place in cases of pyæmia or septicæmia, and that the ordinary kidney infections were ascending. The next step was made when it was recognised that hæmic infection of the kidney could be caused by trivial lesions such as furuncles, finally it was recognised that they were frequently unilateral. Professor Brewer recognised three types of acute hæmatogenous infection of the kidney—the fulminating, the intermediate type, and the mild. The fulminating type was ushered in by a rigor. The temperature rapidly rose to 104° or 105° F., the pulse was 120 or more. Signs of intense and increasing toxæmia were present. Vague pain was felt in the abdomen, but one flank was tender and rigid. The urine, contrary to what might be expected, was as a rule clear, contained a faint trace of pus, and on centrifuging a few pus and blood cells could be obtained. This was because the infected kidney was secreting little or nothing, while normal urine came from the other side. The symptoms grew rapidly worse, and death ensued unless an early nephrectomy was performed. Out of 16 cases Professor Brewer treated 6 either expectantly or by nephrotomy and drainage, all died, while the remaining 10 cases were treated by nephrectomy, and all recovered. The intermediate form was the most common. The symptoms resembled those of the fulminating type, but were not so severe, nor did they tend to increase. There was less toxæmia. The temperature rose to about 102–103°. In this type, also, the urine was almost normal. Professor Brewer considered that in this type decapsulation was the best treatment. As the lesions were superficial they were better drained by this means than by a nephrotomy. The third type was generally called idiopathic pyelitis. But this condition, Professor Brewer thought, did not exist, the kidney was always infected. The treatment could be summed up in three words—"rest, water, and urotropin."

Professor ROVSING was the second reporter. He divided hæmatogenous nephritis into two main groups according to the infecting agent. The first comprised cases due to the colon bacillus group; the second were due to the pyogenic cocci. In acute cases the symptoms were usually sudden in their onset, rigors, high temperature, pain in the back or loin, tenderness and rigidity on that side. Often there was a sharp attack of hæmaturia, which passed off in a few days and left the urine turbid, containing bacteria, pus, and blood cells. Tube casts were present if the infection was due to the pyogenic micrococci; none were found in the colon bacilli cases. When considering the differential diagnosis Professor Rovsing emphasised the importance of his sign in distinguishing this condition from appendicitis. Pressure on the descending colon increased the pain of appendicitis, but had no influence on that of hæmic nephritis. Professor Rovsing stated that he had to do a nephrectomy several times and a partial nephrectomy once for pyogenic infection; the colon bacilli cases got well without operation, unless some complication such as stone, hydronephrosis, &c., was present. Then the operation was directed towards the complication and not towards the nephritis. He found that salol, rest in bed, and 4 to 6 litres of distilled water per diem was the best treatment. He advised that a catheter should be retained in these cases as the bacteria in the bladder increased enormously in numbers between the acts of micturition. In chronic cases he had got fairly good results with vaccines.

Mr. FRANK KIDD (London) described the method he used in examining and treating these cases. He thought the disease rarely proved fatal, and that a nephrectomy was seldom, if ever, indicated. He preferred rest in bed, diuretics, and urotropin, and if the case was chronic lavage of the renal pelvis. He was disappointed with the results obtained by vaccine treatment.

Dr. J. CUNNINGHAM (Boston) divided acute hæmic nephritis into a suppurative and a non-suppurative form. The former required an early nephrectomy; in the latter form he preferred to try expectant treatment, and if the symptoms did not rapidly clear up then do a nephrectomy.

Dr. G. BERG (Frankfurt) described a case in which the patient had both appendicitis and acute hæmic nephritis. It was doubtful which condition was primary.

Dr. R. PICKER (Budapest) thought that the persistence of symptoms in some of these cases might be due to the form of the renal pelvis which did not favour drainage.

### MONDAY, AUGUST 11TH.

This sitting was devoted to a series of

*Epidiascope Demonstrations.*

Dr. DAVID NEWMAN (Glasgow) exhibited a series of coloured drawings illustrating the cystoscopic appearances in early renal and vesical tuberculosis. They were all drawn directly from cases. In his remarks he described lucidly the sequence of changes that take place at the ureteric orifices in early renal tuberculosis, and pointed out that these changes indicated primary infection of the kidney. In a second series he demonstrated the development of tubercles in the vesical mucous membrane.

Dr. PICKER showed an interesting series of slides illustrating his dissections of the human seminal vesicles. His method was to fill the vesicle with a bismuth paste through the vas, and then to dissect out the ramifications of the seminal tubes. He recognised five anatomical types which he demonstrated. To examine the ampullæ of the vasa he took skiagrams of his specimens, and by this means obtained accurate knowledge of their nature.

Dr. R. KUTNER (Berlin) read a short paper on

*The Treatment of Bladder Tumours by a Combination of the High-frequency Method and the Electric Snare.*

If the high frequency alone was used there was a considerable risk of hæmorrhage and of sepsis while the sloughs were separating. To avoid this he first destroyed the tumour by means of the high-frequency method, and about five days later he removed the necrotic mass by means of the electric snare. His paper was illustrated by photographs showing the condition of these tumours after fulguration.

Mr. J. W. THOMSON WALKER (London) showed a series of transparencies taken from radiograms illustrating pyelography. He first described the technique he uses in filling the renal pelvis with collargol; in this he mentioned that the pressure was never allowed to rise above that of six inches of water. His cases fell under three classes: (1) Cases in which a hydronephrosis was suspected on

clinical grounds, but the renal pelvis was not dilated; (2) cases in which some obscure abdominal tumour that was thought to be renal was proved to be unconnected with the kidney; and (3) cases of hydronephrosis due to stone, to movable kidney, aberrant renal vessels, &c. In all cases the results obtained by this method had been verified by operation.

Dr. C. POSNER (Berlin) exhibited a series of micro-photographs of urinary sediments. These were taken from fresh unstained specimens by means of the dark ground illumination. By this means almost transparent objects such as epithelial cells, pus cells, tube casts, crystals, &c., were clearly shown.

Professor B. WAHBY (Cairo) exhibited specimens illustrating the anatomy of the renal vessels obtained by the injection and corrosion method.

Dr. PASTEAU exhibited micro-photographs of the effect of radium on cancer of the prostate. He also showed illustrations of the cystoscopic appearances of vesical diverticula.

Dr. A. F. MOSENTHAL (Berlin) showed a series of skiagrams illustrating renal tuberculosis, doubtful shadows in the pelvis, the growth of calculi and their descent down the ureter.

TUESDAY, AUGUST 12TH.

Dr. GEORGES LUYS (Paris) read a paper on

*Catheterisation of the Ejaculatory Ducts.*

He advocated this operation in cases of painful ejaculations (which were due to stricture of the ducts) and in cases of chronic spermato-cystitis. In this condition he thought that it facilitated the emptying of the vesicles by massage. He pointed out that the ducts could easily be catheterised through his urethroscope, and described the usual appearances they presented when seen through this instrument.

Dr. HUGO SCHÜLLER (Vienna) demonstrated a series of instruments he had devised for the local application of radium in treating various conditions of the lower urinary passages. A series of bougies with receptacles for the tube of radium were constructed for the urethra, prostate, &c. For the bladder a special cystoscope, resembling the ordinary operating cystoscope, was devised. By means of this instrument the radium tube could be brought into direct contact with the tumour to be treated.

Dr. PICKER applied his anatomical findings (reported in the proceedings of the previous day) to the treatment of chronic spermato-cystitis. He recommended digital massage for the condition, but stated that in many cases a cure could not be expected within from three to five months.

Mr. JOLY read a paper on

*Congenital Diverticula of the Bladder.*

For the single large diverticula he thought that excision was the best treatment, and described two cases in which he had performed this operation. In the second part of the paper he suggested that some at least of these diverticula might be due to the dilatation and growth of a supernumerary ureteric bud. He argued that in these cases two buds sprang from the Wolffian duct, that one of these developed into the normal ureter, while the other failed to reach the kidney and became dilated into a diverticulum. He brought forward some evidence in favour of this hypothesis.

In the absence of Professor V. Rochet (Lyons), Dr. LÉON F. A. THEVENOT (Lyons) read a joint paper on the question of

*The Possibility of Hypertrophy of the Prostate occurring in Cases of Stricture of the Urethra.*

These authors appeared to think this contingency impossible, as the prostate was either destroyed by back pressure, suppuration and so on, or was so much altered that the growth of adenomata was impossible.

Dr. GEORGES NICOLICH (Trieste) described two cases in which he had done a sub-total cystectomy for tumour. In both these cases a bladder of good capacity had regenerated from the small portion that had been left behind. He also described a case of sudden death from air embolism. The bladder was being filled with air previous to prostatectomy when the patient died. At the necropsy a small tear was found in the mucous membrane just over the trigone.

Dr. BERG exhibited a large cystine calculus he had removed from a child.

At the termination of the sitting Professor ROVSING proposed on behalf of the visitors that a vote of thanks should be sent from the Urological Section to the general secretary and the central committee for the careful and elaborate organisation of the Congress. This was passed with acclamation. The PRESIDENT thanked Professor Rovsing for the vote of thanks, and undertook that it would be sent up to the central committee.

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## SECTION XV.—RHINOLOGY AND LARYNGOLOGY.

FRIDAY, AUGUST 8TH.

*President*, Sir STCLAIR THOMSON (London).

Dr. ANDRÉ CASTEX (Paris) read a paper on

*The Methods and Results of Treatment of Diseases of the Throat, Nose, and Ear, by Salvarsan and other Arsenical Compounds.*

He considered that these drugs were often useless and sometimes harmful in ear diseases; but that deafness occurring more than two months after an injection should not be charged to the drug. He also thought that these drugs were useful in diseases of the nose, pharynx, and larynx. Hectine was useless, and atoxyl might cause neuritis.

Following with his paper, Professor P. GERBER (Königsberg) was in favour of giving these drugs in all cases of syphilis of the nose, throat, and ear; but in the case of the last the patient must be carefully watched.

Mr. H. WHALE (London) showed an improved apparatus for intravenous injection. In a series of 20 cases he had obtained good results in assisting the separation of sequestra of the nose.

Dr. C. KOENIG (Paris) quoted a striking case of sudden and irreparable deafness occurring one year after the injection, but was uncertain whether the latter was responsible.

In the discussion which followed, Dr. DAN MCKENZIE (London), Professor G. ALEXANDER (Vienna), and Sir ROBERT WOODS (Dublin) ranged themselves on the side of these drugs; whereas the opposite camp considered that the dangers were great, and included Professor G. FINDER (Berlin), Dr. A. MAURICE (Paris), Dr. A. DE STELLA (Ghent), Dr. W. A. LIEVEN (Aix-la-Chapelle), Dr. H. MARSCHIK (Vienna), and Dr. E. V. SEGURA (Buenos Aires).

Dr. DUNDAS GRANT (London) considered that tracheotomy should not be performed for syphilitic laryngeal stenosis without a previous injection of "606."

Professor G. B. BRÜHL (Berlin) was in favour of a maximum dose very early for labyrinthine deafness.

Dr. F. NEUMANN (Vienna) read a paper on the Treatment of Œsophageal Stenosis, with interesting lantern slides of a child's œsophagus after swallowing corrosive acid.

Dr. J. KUBO (Japan) criticised the œsophageal bougies in use.

*Afternoon Session.*

Professor G. KILLIAN (Berlin) gave a brilliant demonstration of suspensory laryngoscopy on two patients. The only anæsthetic used was cocaine in alcoholic solution. There was no pain caused. The whole section, filing slowly past, had a good view of the larynx, and at the end the patients expressed themselves as feeling entirely unhurt.

Mr. ERNEST B. WAGGETT (London) read a paper on

*Post-cricoid Carcinoma.*

After alluding to the curious age-incidence in women (30 to 40) he said that, analogous with carcinoma of the tongue, removal of growth and glands often cured; no recurrence need be feared in the intermediate lymphatic channels. Septic pneumonia as a sequela was less common than was alleged. Recurrence, if any, was not local, but in the glands. The operation was within the scope of everyday surgery, and every case complaining of irritation of the throat alone should be early and carefully examined.

An abstract of Mr. WILFRED TROTTER'S (London) paper on the same subject was read. To combat sepsis he closes the pharyngeal gap, and he reconstitutes the pharynx as a prevention of stricture.

Mr. P. R. W. DE SANTI (London) considered that if practitioners would only realise the remarkably early age-incidence more cases would, when first observed, be operable.

Dr. A. LOGAN TURNER (Edinburgh) and Dr. MARSCHIK spoke in favour of gastroscopy.

Dr. G. WILLIAM HILL (London) and Professor V. UCHERMANN (Christiania) advocated, as an adjuvant to operation, the use of radium.

Sir ROBERT WOODS described an ingenious method of fixing a laryngeal tube.

Mr. WAGGETT, in reply, referred to the excellent access to the post-cricoid region obtained by Mr. Trotter's route, in which the posterior third of the thyroid ala is removed.

Dr. W. JOBSON HORNE (London) read a paper on

*Pachydermia Laryngis.*

He said: The cardinal symptom, huskiness, is very slight. The explanation of the appearance of a swelling on one cord, fitting into a concavity on the other, lies in the hyperplasia of a normal subglottic mucous fold. Frozen sections show that in a later stage one cord lies on a slightly higher level than the other. This slight alteration in level permits of almost perfect adduction; hence the triviality of symptoms. The paper was illustrated by lantern slides.

SATURDAY, AUGUST 9TH.

Professor H. BURGER (Amsterdam) and Dr. J. L. GOODALE (Boston, U.S.A.) read papers on

*The Indications for, and Relative Values of, Tonsillotomy and Tonsillectomy.*

Professor BERGER considered that for children tonsillectomy should be reserved for cases of recurrent tonsillitis in small tonsils. For simple hypertrophy it was unnecessary. Its application to adults was more extensive.

Dr. GOODALE favoured the complete operation. After tonsillotomy he had frequently seen cicatricial narrowing of crypt orifices productive of concealed sepsis. There was no evidence that tonsillectomy yielded any systemic ill-effects; it sometimes damaged the singing, never the speaking, voice. He still used tonsillotomy for simple hypertrophy.

Mr. E. D. D. DAVIS (London), who is an active partisan of tonsillectomy, quoted statistics of the Charing Cross Hospital proving how successful this operation was there, and mentioned one case of a schoolboy who had undergone tonsillotomy every term for three years.

Mr. J. F. O'MALLEY (London) reserved tonsillotomy only for prominent tonsils. He regarded it as an inexact operation because it was impossible to say how much tissue would, or should, be removed. With the guillotine both tonsils might be enucleated in from 10 to 12 seconds.

Mr. WHALE showed that in a series of nearly 7000 cases at St. Bartholomew's Hospital serious hæmorrhage was twice as frequent after tonsillectomy as after tonsillotomy. But a recent examination of 220 cases operated on as far back as 1908 showed that whatever the indication for operation, with the single exception of voice troubles, tonsillectomy is the operation of choice.

Mr. T. J. FAULDER (London) was a vigorous advocate of complete removal, and adduced strong testimony in that in a large series of cases at Golden-square 14 per cent. had previously undergone tonsillotomy.

The PRESIDENT opened the question of anæsthesia, and Dr. H. LUC (Paris) advocated local infiltration with cocaine.

Other speakers favouring on the whole tonsillectomy were Dr. H. TRETROP (Antwerp), Dr. S. S. WHILLIS (Newcastle-upon-Tyne), Dr. W. S. SYME (Glasgow), Dr. MARSCHIK, and Mr. F. C. PYBUS (Newcastle-upon-Tyne).

Mr. HERBERT TILLEY (London) reserved the old operation (tonsillotomy) for elderly people, and Dr. JOBSON HORNE pleaded for investigation of the tonsillar function before dogmatising.

In favour of tonsillotomy were Dr. LUC, Dr. BROECKHAERT (Ghent), Dr. P. WATSON-WILLIAMS (Bristol), Dr. E. P. FRIEDRICH (Kiel), Professor W. SOBERNHEIM (Berlin), and Mr. W. H. KELSON (London).

Mr. WAGGETT and Dr. KUBO also spoke.

Dr. W. M. STOOKEY (Salt Lake City, U.S.A.), Dr. M. HALLE (Berlin), and Professor UCHERMANN reserved tonsillectomy for special cases.

Professor BURGER and Dr. GOODALE replied.

Dr. O. HIRSCH (Vienna), in his paper on the Surgical Treatment of Affections of the Pituitary Body by the Nasal Route, divided pituitary tumours into: (1) solid intracellular; (2) cystic intracellular; and (3) cranial. He then described his route, which is made through the widely separated mucous flaps obtained by submucous resection of the nasal septum.

Professor HARVEY CUSHING (Boston, U.S.A.) dealt with the physiological effects of the gland extract. He then by lantern slides exemplified the reduction of the perimetric field and the bitemporal hemianopsia. He had found teratomata to be fairly common, and, being tumours superimposed on gland, not accessible by the nasal route; in such cases the sella turcica was normal in the skiagram. Moreover, the trans-sphenoidal route did not reach the lateral extensions. In such cases the temporal route was indicated. Pituitary myxœdema improved on pituitary feeding.

Dr. G. WILLIAM HILL (London) gave with lantern slides a concise epitome of the various routes of access.

Dr. HALLE thought the nasal method better for drainage.

Dr. BROECKHAERT advocated the transpalatine method.

Dr. MARSCHIK, Mr. F. H. WESTMACOTT (Manchester), Dr. WEIL (Berlin) and Dr. HOLMGREN (Stockholm) also discussed routes and quoted cases.

MONDAY, AUGUST 11TH.

At the afternoon session a demonstration of new instruments gave practical evidence of the constant advance in this branch of surgery. The improved attempts to photograph the living larynx by Dr. GAREL (Lyon), and direct examination of the nasopharynx by Dr. A. GYERGYAI (Kolozsvar) followed as bright satellites the brilliant star of Professor Killian's direct laryngoscopy on Thursday.

Other useful demonstrations were those of the PRESIDENT, Dr. KUBO, Dr. TOVÖLGYI (Budapest), and Dr. WATSON-WILLIAMS.

Papers were read by Mr. W. D. HARMER (London) and Dr. LOGAN TURNER (Edinburgh) on

*Treatment of Diseases of the Nose and Throat by Therapeutic Inoculation, Exclusive of Tuberculin and Diphtheria Antitoxin.*

Mr. HARMER'S paper was the result of four years' careful work. At a time when, in some quarters, the too zealous lauding of vaccines as a panacea has incurred the grave criticism of the orthodox, his determination neither to emphasise his good nor minimise his bad results was admirable. Some of his most important conclusions were: that as regards reaction, sensitised vaccines are better tolerated than non-sensitised; that excellent results may be expected in streptococcus infections; that in atrophic rhinitis Friedlander's bacillus is usually found, and vaccines are useless; and that in frontal sinus operations and in laryngectomy vaccines are useful if given beforehand.

Dr. TURNER'S paper began with an instructive analysis of 50 cases. He differed from Mr. Harmer chiefly on two counts: that he had seen improvement after six to eight injections in 10 out of 18 cases of atrophic rhinitis, and that vaccines are useless in sinusitis prior to operation.

Mr. WAGGETT, quoting from an experience of 50 cases, noticed no marked local improvement, but a general sense of *bien-être*.

The PRESIDENT commended the openers for their researches, persevered with in the face of discouraging results. He thought the sense of *bien-être* was usually subjective and unreliable, and urged reticence in claiming good results.

Dr. DAN MCKENZIE, in emphasis of the moderation and fairness of the openers' papers, quoted a case in which a mass of polypi were left in a nose and a vaccine prepared from the droppings.

Dr. H. LYON SMITH (London) thought that sometimes a diphtheroid bacillus, considered harmless, might really be responsible.

Dr. SEGURA (Buenos Aires) read a paper on

*Mycosis of the Upper Respiratory and Digestive Tracts.*

His lantern slides were excellent, and emphasised his contention that, inasmuch as the ulceration of palate and fauces was often deep, a careful diagnosis from syphilis was paramount. There was no rise of pulse or temperature or other general disturbance.

TUESDAY, AUGUST 11TH.

Professor FERRERI (Rome) read a paper on

*The Malignant Growths of Nose and Nasopharynx (Fibroma excluded).*

He showed that such growths were commoner in the nose than in the nasopharynx, and generally came for treatment too late. Electrolysis and radium held out the best prospects

of cure, apart from operation. Other methods were fulguration, high frequency, and chemical reagents.

Dr. MARSCHIK, discussing the etiology, gave as causes trauma, benign growths, empyemata, and polypi. He quoted a case of myxoma in a child aged 3, and sarcoma in one aged 5. When squamous epithelioma is found where normally no squamous epithelium exists, the explanation lies in metaplasia. Rhabdo-myo-sarcoma had been found in two cases. His classification is into growths from the upper part of the nose, mostly the ethmoid, very malignant; and from the lower part and septum, with a better prognosis. Unilateral polypi in old people are always suspicious. Few of the lymphatics drain into the submaxillary gland. The majority go *viâ* the retropharyngeal chain to the deep cervical, which are not palpable or obvious to examination.

Dr. LUC strongly advocated local anæsthesia for operations.

Dr. JACQUES (Nancy) referred to the treatment by local injection of colloidal copper.

The PRESIDENT objected to operations involving removal of the upper jaw.

Dr. J. W. BOND (London) advocated preliminary laryngotomy.

Mr. FAULDER advocated the use of a frame to fill the cavity and reduce deformity.

Dr. SEGURA and Mr. TILLEY advocated radium.

Professor JANSEN (Berlin) emphasised the importance of epistaxis as an early symptom.

Professor H. GUTZMANN (Berlin) read a paper emphasising the value of experimental phonetic methods in the diagnosis of functional voice disturbances.

Professor GRADENIGO (Turin) and Mr. MACMAHON (London) also spoke on this subject, the latter remarking that when organic and functional voice troubles were both present it was often difficult to say which was primary and which secondary.

Dr. KUBO followed with a paper on Nasal Polypi. He found that they were often unilateral and generally associated with chronic sinusitis.

Dr. A. BROWN KELLY (Glasgow) mentioned that the affected side often transilluminated better than the sound side.

*Afternoon Session.*

Dr. A. SARGNON (Lyons) read a paper on

*The Actual Position of Laryngostomy.*

He pointed out that the operation was first done in Italy. When done for tracheal stenosis the tracheotomy tube should not be removed too soon. The dilator might be gauze, rubber tube, or compressed cotton-wool. The indications were fibrous stricture due to tuberculosis, cartilaginous strictures, and recurrent papillomata. He advocated for laryngeal strictures excision of arytenoids and ventricles, leaving the cords in the abducted position. His mortality was 8 per cent.

The PRESIDENT regretted that we had less experience of laryngostomy in England.

Dr. MARSCHIK urged that before performing this operation tracheotomy should be given an extensive trial.

Mr. WAGGETT described Dr. William Hill's method of dilating with a double spatula tube.

Professor VON EICKEN (Giessen) described his apparatus. A double cannula for respiration was connected with a laryngeal dilator and left *in situ*. Dilatation occupied from six to eight weeks.

Dr. L. HEMINGTON PEGLER (London) read a paper with illustrative map specifically designating certain important and hitherto unnamed branches of the fifth nerve, and explaining the referred pain in pressure of the middle turbinal on the septum.

Dr. J. CAMERON (London) read a paper by himself and Dr. W. MILLIGAN (Manchester), with slides, demonstrating development of olfactory nerve in fish, birds, and mammals. It was stated that anosuria was most likely to be due to lesions where the olfactory nerves began at the bulb or ended in the mucous membrane, because at these places the neurilemma was deficient.

Dr. HALLE described his methods of dealing with internal and external nasal deformities. His results, shown by lantern slides of photographs before and after, were wonderfully good, and it was obvious that by legitimate surgical methods he has made many ugly people handsome. His demonstration was loudly applauded.

## SECTION XVII.—STOMATOLOGY.

*President*, Mr. MORTON A. SMALE (London).

SATURDAY, AUGUST 9TH.

Dr. J. SIM WALLACE (London) opened a discussion on

*Dental Disease in Relation to Public Health.*

He expressed his regret at the difficulty experienced in persuading the average medical man to take dental diseases seriously. The comparative rarity of a fatal issue as a direct result of dental caries perhaps accounted for this. Figures were given showing the ravages of caries in children and adults. Maladies usually associated with dental disease and arising often from similar sources were frequently overlooked by practitioners of medicine, as also were those many morbid conditions upon the course of which the presence of dental lesions acts so unfavourably. Dr. Wallace was of opinion that many specialists in the maladies of children were among the worst offenders in this respect, in that they omitted to become acquainted with the correct methods, both hygienic and dietetic, by means of which a healthy dental condition might be obtained. A small pamphlet issued by the Society for the Health of Women and Children, entitled "Feeding and Care of Baby," would provide information of very real value to any medical practitioner concerned with the care and treatment of young children. In recent years rather more attention was being paid by the general medical profession to dental disorders than formerly, but there still remained much room for improvement in this respect. Dr. Wallace said that if the following simple rules were obeyed dental caries could be prevented. 1. During the first two and a half years of life all starchy and sugary food (except milk) should be given in a firm and fibrous condition, so as to stimulate mastication and salivation. Bread and other farinaceous food should never be added to or soaked in milk. 2. After the age of 2½ years children should always have a considerable amount of farinaceous food in such a condition as will stimulate a pleasurable amount of efficient mastication. 3. Meals should be arranged in such a way that if soft, sugary, or starchy food has been taken, the mouth and teeth will be cleansed by food of a detergent nature, such as fresh fruit, taken immediately afterwards. 4. Three meals a day are to be preferred to any greater number. Sweets, chocolate, or biscuit and milk should never be eaten between meals or just before going to bed. In conclusion, Dr. Wallace emphasised the need for efficient instruction of medical students in the physiological phenomena occurring in the mouth. This end could be attained by teaching on general lines. It was all-important that general knowledge should not be made subservient to the teaching of special subjects.

Among the many subsequent speakers, Dr. F. T. KING (New Zealand) congratulated Dr. Wallace upon his invaluable work, which in New Zealand, at any rate, was rapidly bearing fruit.

Mr. J. F. COLYER (London) dwelt on the financial aspect of the question, and showed that the invaliding of soldiers and sailors (whose education had cost the country some hundred pounds apiece), on account of the condition of their teeth, involved a very considerable financial loss to the country, whereas the services of these men might have been retained at a comparatively small outlay if only commonsense rules were followed. He did not feel that school clinics were satisfactory as carried on at present, but urged the great value of public instruction by means of lectures delivered by men of unquestioned authority.

Mr. J. G. TURNER (London) maintained that the damage was due to soft, sticky foods, notably the finely ground flour of to-day. A return to the coarse ground flour would, in his opinion, solve the whole question.

Dr. E. S. TALBOT (Chicago) maintained that a disturbed condition of the nervous system was mainly responsible for the evils described.

Mr. W. A. MAGGS (London) felt convinced that normal oral secretion was the most important factor in maintaining a healthy condition of the teeth.

Dr. A. W. W. BAKER (Dublin) said that a sum of money had been set aside in Dublin for the establishment of dental clinics, but he doubted whether the sum was sufficient to carry on the work as it should be done.

Dr. SIM WALLACE, in replying to the various points raised, said that if a tax were put on sugar and the proceeds

earmarked for carrying on dental clinics, the financial burdens of the question might be lightened.

### MONDAY, AUGUST 11TH.

At the morning session a discussion was held conjointly with Section XVIII. upon the question of

*The Supervision of School Children Between Infancy and School Age.*

The discussion was opened by Dr. W. LESLIE MACKENZIE (Edinburgh) and Dr. DINET (Paris), who confined their remarks mainly to the general administrative side of the question.

Mr. W. W. JAMES (London), in opening the discussion from the dental standpoint, dwelt upon the great importance of careful dental supervision of children in the first five years of life, and enumerated the various causes from which dental diseases and deformities may arise.

Dr. D. FORSYTH (London) and Dr. JAMES KERR (London) described some of the means already in use for obtaining some hold over the children before they reached school age.

Mr. COLYER explained that the seeds of practically all dental disease were sown between the ages of 2 and 5, and arose from two main causes—viz., nasal obstruction and improper diet. Dental preventive treatment, as far as it had been carried out up to the present, showed results nothing short of marvellous. The rules necessary to obtain a healthy oral condition were quite simple, and if hygienists would only take pains to inculcate these simple rules into the minds of both parents and children, many lives and much money would be saved to the country. At the Royal Dental Hospital instructive lectures were held from time to time, and much good had resulted.

Mrs. LESLIE MACKENZIE described the regular toothbrush drill carried out in the free kindergartens in Edinburgh.

Dr. SIM WALLACE complained of the lack of correct teaching of oral physiology to medical students.

Mr. A. S. ARKLE (Liverpool) regretted that dentists in their treatment of children did not follow the instructions given them by medical men.

Mr. TURNER pointed out that there were so many children to treat, and so few dentists to treat them, that it was physically impossible to perform the conservative operations necessary to save carious temporary teeth. It was for this reason that a large number of these saveable teeth were extracted.

*Afternoon Session.*

Dr. DELGUEL (Bordeaux) read a paper dealing with Hypoplasia of Teeth in its various forms, and emphasised the impossibility of saying with certainty whether a given tooth was syphilitic or not.

Mr. E. L. SHERIDAN (Dublin), in a paper on Surgical Prosthesis, described various methods by which suitable restorations might be obtained after operations upon the maxilla or mandible. He also dealt with the measures required in cases of cleft palate, and the means employed to restore the nose.

Dr. J. J. BOERMA (Arnheim) narrated a case in which the portion of the mandible from behind the first molar on the one side to a similar point on the other side had been removed. Before the case came under his care considerable contraction had occurred, with the result that the two fragments had been drawn together, so much so that it was barely possible to push the tip of the second finger between the right and left second molars. By means of a small expansion arch, devised on the plan of an Angle s arch, he had been able to obtain sufficient expansion to enable him to introduce a prosthetic apparatus which restored to a remarkable extent both the appearance and masticatory power of the patient.

Dr. F. AGUILAR (Madrid) showed slides and models of several cases in which immediate prosthesis had given excellent results. He said that it was essential that the dentist should see the case before operation in order that the appliance might be introduced as soon as the bone had been removed, and before the wound was sutured.

Mr. H. LLOYD WILLIAMS (London) read a paper calling attention to the importance of preparation of the mouth before surgical operations. Even in the case of operations on quite distant parts of the body, careful preparation of the mouth was essential in order to attain rapid convalescence.

Dr. O. AMOEDO (Paris) read a series of papers dealing with the anatomy and physiology of the temporo-maxillary articulation, and the occlusal planes, and demonstrated a new form of articulator devised by himself.

After the meeting a clinical gathering took place in the conservation-room of the Royal Dental Hospital. Many cases of great interest were shown by members of the staff. There was also an exhibition of bacteriological and histological specimens.

### TUESDAY, AUGUST 12TH.

The final meeting of the section was devoted to a discussion of

*Reflex and Functional Disturbances Connected with the Teeth.*

Dr. A. W. W. BAKER (Dublin), in opening the discussion, referred to the literature on the subject during the last 35 years. He said that at the commencement of this period many cases were put down as due to dental irritation, for which, in the light of more recent pathological investigations, more obvious etiological explanations were forthcoming. In fact, the diagnosis of dental irritation was frequently nothing more than a refuge for the ignorant. Nevertheless, he was of the opinion that, when all allowance had been made for those cases which might bear a different interpretation as to their etiology, an important group of cases remained which might admittedly depend upon reflex action from dental irritation. Dr. Baker went on to refer to "reflex odontalgia"—that is to say, pain referred to the teeth which is really due to ocular, nasal, cerebral, or visceral disturbances. Several interesting cases, recorded by various authors, and illustrating these points, were narrated. He then referred to the close anatomical connexion between the fifth and the other cranial nerves. It had been shown by Gaskell that, apart from the first, second, and eighth nerves, all the cranial nerves were developmentally connected with the sensory root of the fifth nerve. The structure of the medulla oblongata showed that the sensory (or posterior) root portions of the ninth, tenth, eleventh, and twelfth nerves (excluding the visceral branches) were absent from the nerves themselves, and that they had become diverted to help to form the sensory part of the fifth, and the Gasserian ganglion. With regard to the remaining nerves, it was shown that their sensory nuclei had degenerated, although their anatomical outlines still remained, but were now functionally represented by the sensory root of the fifth. Dr. Baker felt that the cases related and the anatomical facts stated went a long way towards proving that reflexes arising from dental disease were under certain circumstances capable of causing disturbances elsewhere.

Dr. ROUSSEAU-DECELLE (Paris), after showing by evidence drawn from anatomy and physiology and clinical practice, the distinct reflex activity of the trigeminal nerve, dealt with the various forms of gingivo-dental irritation produced as reflexes and their different mode of action. He demonstrated by means of beautifully executed diagrams in colour the various skin areas in which pain referred from various teeth might be felt. The areas affected by the mandibular teeth were represented in stripes, those of the maxillary in self colours, a colour for each tooth.

Mr. A. S. UNDERWOOD (London) related two cases occurring within his personal experience which seemed to show that conditions so far removed from the mouth as sciatica might arise as a result of dental irritation.

Mr. COLYER thought that dental sepsis was a far more likely and far more scientific explanation of many of these phenomena than reflex action.

Among the many other members contributing to the discussion, Mr. A. HOPEWELL-SMITH (London) pointed out that increased blood pressure and alteration in the chemical constituents of the blood might in some cases have a definite bearing on the conditions under discussion.

Dr. AMOEDO related two cases, not only in his own experience, but in his own mouth, in which dental irritation had been responsible for ocular mischief.

Mr. TURNER emphasised the growing recognition of sepsis and the consequent diminution in the importance of reflex action.

Dr. BAKER, in his reply, quite agreed with the points raised in regard to sepsis, but maintained that, even if this were granted, reflex action could not be left out altogether.

The customary votes of thanks to the President and officers of the section concluded the meeting.

## SECTION XXI.—TROPICAL MEDICINE AND HYGIENE.

MONDAY, AUGUST 11TH.

*President*, Surgeon-General Sir DAVID BRUCE, C.B., F.R.S.

The morning sitting was devoted to a discussion on

*Leishmaniasis*,

and it was very appropriate that Colonel Sir WILLIAM B. LEISHMAN, A.M.S., from whom this class of parasitic diseases receives its name, should preside on the occasion. He congratulated the section on the honour of having the discussion opened by so distinguished an authority as Professor Laveran and on having present so many other men of eminence in tropical medicine.

Professor A. LAVERAN (Paris) then read an abstract of a full "report" prepared by himself and Dr. C. NICOLLE (Director of the Pasteur Institute, Tunis) on

*Mediterranean or Infantile Kala-azar*,

a short summary of which appeared in THE LANCET of August 2nd. It was pointed out that this form of leishmaniasis was observed as a natural infection of the dog in the regions where the human variety was endemically present. The infection was inoculable in the dog and also in a less degree in the monkey, the mouse, and the rat. The infection lost some of its virulence in its passage through these last-named animals. It was the exception that the inoculation of leishmania infantum on the guinea-pig or the rabbit gave rise to general infection The authors thought that the identity of L. infantum and L. donovani would soon be definitely established.

Dr. L. NATTAN-LARRIER (Paris) spoke upon the subject of dermal leishmaniasis, on which he is an acknowledged authority.

Dr. E. DE FREITAS CRISSIUMA (Brazil), speaking in French, discussed the form of leishmaniasis which was met with in South America (L. americana).

Dr. R. GONDER (Frankfort) spoke, in German, about certain experiments that he had made with leishmania in mice and other animals, and showed some lantern slides.

Sir WILLIAM LEISHMAN denied any claim to speak as an authority on the subject, but raised a number of very important points. We needed, he said, more information as to the mode of spread of the three well-known forms of leishmania infection—viz., the Indian, the Mediterranean, and the dermal (L. donovani, L. infantum, and L. tropica). The Indian variety was probably spread by the bed bug, but it had not yet been definitely proved. The Mediterranean form, from proofs adduced by Basile and confirmed by Sergent, was in all probability spread by the dog flea. It was surprising how little was yet known of dermal leishmaniasis. We were not yet in possession of the life-history of the leishmania parasite. He mentioned that Captain R. G. Archibald, R.A.M.C., in the Sudan, had found coccal bodies after puncturing the liver of persons suffering from kala-azar. There was probability that these bodies formed part of the life cycle of the parasite. Also the possibility of granule shedding in leishmaniasis could not be put aside altogether. Though there was a general opinion that the Indian and Mediterranean forms of kala-azar were identical, yet some differences remained unexplained. In India, for example, the majority of the victims were adults, but in the Mediterranean littoral they were children. The blood counts were also different in the two forms. Distinct leucopenia occurred in the Indian variety, but not in the Mediterranean disease. The presence of this parasite in the blood was commoner in the Indian malady than in the other. Before the absence of infection could be regarded as proved it was necessary to make direct examinations of the blood, to make cultures, and to carry out injection of animals.

Dr. R. ROW (Bombay) described some experiments that he had made with leishmania on monkeys, and showed a number of lantern slides illustrating the various forms of the parasite.

Dr. AYRES KOPKE (Professor of the School of Tropical Medicine, Lisbon) discussed dermal leishmaniasis and showed some lantern slides.

Dr. A. SPLENDORE (Brazil), Professor F. RHO (Director-General, Medical Department of the Italian Navy), Dr. D. E. ANDERSON (London), and Dr. L. P. PHILLIPS (Cairo) continued the discussion.

Sir PATRICK MANSON thought that there might be some prospect of attenuating the virus of kala-azar by passing it through some of the lower animals; and perhaps vaccines prepared from mild cases of dermal leishmaniasis might ultimately be found to have a curative or preventive effect upon the more virulent Indian form of this disease.

A short paper was read by Dr. DE FREITAS CRISSIUMA on "Boula," a form of disease affecting the skin, and which may probably turn out to be a form of leishmaniasis.

An interesting presentation was then made to Sir Patrick Manson by Professor R. BLANCHARD (Paris) in the name of the International Society of Tropical Medicine, who desired to show their esteem and to recognise the great services which Sir Patrick Manson had rendered to science and to humanity especially in regard of tropical diseases. Through his exertions schools of tropical medicine had been established in various countries, and to his genius had been due the beginning of many of the investigations which had thrown so much light upon the causes of exotic disease. By international subscription a medallion had been provided, designed by Dr. Richer, professor of anatomy in the School of the Fine Arts, Paris. Professor Blanchard said that he had great pleasure in presenting the medallion in bronze (a gold replica of which, we understand, will later be handed to Sir Patrick Manson). The medallion, which contains on one side a likeness of Sir Patrick Manson, was then handed to him amid loud applause, continued for some time.

The warmth of his reception seemed to move Sir PATRICK MANSON, who for some time found difficulty in speaking. He said that his heart was too full for words. He had in the course of his long career been the recipient of approbation and honours from people at home, but on the present occasion foreigners as well as his own countrymen had joined in the presentation, and this was what made it all the more gratifying to himself. For many years he had been one of a small band seeking to prevent tropical diseases; that band had now grown into a large army, full of enthusiasm, and likely by their efforts to solve soon the problems of tropical medicine. He likened himself to an old Chelsea pensioner who, unable to fight any longer, continued to share the interest and enthusiasm of the active soldiers. He could never forget the kind international testimonial which had just been presented to him with such warmth.

After three cheers had been given for Sir Patrick Manson the section adjourned.

*Afternoon Session.*

Sir WILLIAM LEISHMAN presided again at the afternoon meeting.

Dr. L. SAMBON (London) read a paper on

*Pellagra*,

in which he asserted that he had discovered in recent years some 40 cases of the disease in England, and that if search were made systematically it was possible that hundreds of others might be brought to light. From the islands of the Hebrides, from the mainland of Scotland, from England, and from Wales he had notes of the occurrence of cases. In the United Kingdom, as on the continent of Europe and in America, the presence of the disease was associated with the proximity of running water and the presence of the Simulium fly. The British cases had nothing at all to do with the consumption of maize. Dr. Sambon showed a series of lantern views illustrating the clinical appearance of the disease and the eruption upon the face and wrists.

The paper was discussed by Dr. ANDERSON, Mr. J. CANTLIE (London), and Dr. J. H. FENN (Mexico).

Dr. SAMBON, in reply, mentioned that there were 50,000 cases under treatment in the United States at the present time. He believed that formerly the disease had not been recognised, but had been diagnosed, treated, and ultimately certified under other headings.

Dr. AYRES KOPKE read a paper on

*Traitement de Quelques cas de Trypanosomiasis Humaine par le Salvarsan et le Néosalvarsan.*

He believed that salvarsan employed in intravenous injections did not cause the disappearance of the trypanosomes in the spinal fluid of those attacked by the disease. Like atoxyl and the other derivatives of that substance, it could cause the rapid disappearance of the flagellates from the blood and the gland juice; it seemed, however, to be still too soon to say that this disappearance would be permanent and a definite cure obtained.

Dr. DUPONT (Senegal) read a paper prepared jointly by himself and Dr. TENON on

*Le Traitement de la Maladie du Sommeil par Galyl*

by intravenous injections. Their experiments lead them to think that this mode of treatment will prove a true specific against trypanosoma gambiense, for some cases which received the injections a year ago have not yet had a relapse.

Professor LAVERAN also spoke and Dr. DUPONT replied.

Professor J. W. W. STEPHENS (Liverpool) supplied a contribution on Blackwater Fever, showing, by a number of statistical tables thrown on the lantern screen, evidence of the association of the disease with malaria. If not actually caused by malaria, there could be little doubt that it was a malady of malarial origin. He admitted, however, that further investigations on the subject were needed.

Dr. A. MASIE (Jerusalem) also read a paper on Blackwater Fever.

Professor von WASIELEWSKI (Heidelberg) then gave a lantern demonstration of the Halteridium Disease of Birds, and later gave a microscopic demonstration of his preparations in the side room.

After some remarks by Dr. GONDER the proceedings terminated.

### TUESDAY, AUGUST 12TH.

The discussion placed on the programme for to-day was on

*Relapsing Fevers,*

and Dr. F. M. SANDWITH (London), who presided, called upon Professor S. HATA (of the Institute for Infectious Diseases, Tokio) to read his paper, entitled

*A Contribution to our Knowledge of the Cultivation of Spirochæta Recurrentis.*

The difficulty of cultivating spirochætæ was well recognised, but the author, by repeating Noguchi's experiments, and by improving the medium, had succeeded in carrying on cultures from mouse to mouse, and in this way preserved the spirochætæ of African relapsing fever. His new culture medium consists of normal horse serum and buff coagulum. It was always found to produce uniform results. Relapsing fever prevailed in Tokio during the spring and early summer of the present year. The specific germ is apparently different from that of African relapsing fever, but has not yet been identified. The blood of a patient was inoculated directly into the culture medium, and the growth of the spirochætæ was thus observed. The virulence of cultivated spirochætæ appears to be relatively weak. Professor Hata then described his experiments in detail.

Dr. E. PRIMET (Medical Inspector-General, French Equatorial Africa) gave some account of the treatment of relapsing fever in a paper "Sur l'Emploi des Derivés Arsenicaux dans la Fièvre Recurrente."

Dr. ANDREW BALFOUR (London), alluding with regret to the absence of Professor C. Levaditi (Paris) and Professor F. G. Novy (Ann Arbor, U.S.A.), who had been announced to take part in the discussion, gave a short review of the work which had been recently done on the subject of relapsing fever in the Sudan, and referred more particularly to the granule shedding in connexion with spirochætæ. He referred to the difficulty of cultivating these organisms, but thought that Professor Hata had succeeded, by his simplification of the procedure, in overcoming the obstacles.

Dr. S. T. DARLING (Panama) spoke as to the behaviour of relapsing fever of late years in the Panama canal zone. Importation of infection from Colombia and other republics in the north of South America sometimes occurred, but in nine years there had only been 46 cases. The infection was transmitted by ticks. He had made experiments on monkeys with spirochæta novyi, details of which he mentioned.

Sir WILLIAM LEISHMAN spoke of the difficulties encountered in cultivating spirochætæ. He discussed the question of granule shedding in spirochætosis. He had been working on the subject, but had not yet published his results. He thought there was evidence showing the important influence of temperature on the organism in the tick. He kept ticks at a temperature of 29° C. for some time after they had been infected by spirochæta duttoni; the spirochætæ disappeared from the ticks after a few days, but in some cases reappeared again. He thought that the granule was capable of giving rise to a spirochæta. All granules, however, did not develop these organisms, but only a small fraction of them. Sir William Leishman then showed upon the illuminated screen some extremely convincing slides illustrating in a striking manner the development of the spirochæta from the granule.

Dr. P. H. BAHR (London) gave a short demonstration of Filariasis and Elephantiasis, illustrated by microscopical specimens, and referred to his investigations on the subject in Fiji and other islands in the Pacific.

The paper was discussed by Dr. E. BLACK (Western Australia) who referred to the excellent work done in the earlier days by Joseph Bancroft.

Professor F. FÜLLEBORN (Hamburg) also spoke, and expressed the opinion that the etiology of elephantiasis was still surrounded with doubt.

Professor FÜLLEBORN then read a contribution entitled "Ueber die Entwicklung von Porocephalus," and this was illustrated by a large number of lantern slides giving the life-history of the "tongue worm" and its development in animals.

Dr. V. SCHILLING-TORGAU (Hamburg) next gave a demonstration, "Ueber die feinere Ausarbeitung der Blutmorphologie zur Erhöhung der klinischen Verwendbarkeit und zur Abgrenzung parasitärer Bestandteile auf dem Gebiet der Tropenkrankheiten," and this was illustrated by many lantern slides.

Dr. SANDWITH, in complimenting Dr. Schilling-Torgau on the excellence of his demonstration, alluded in flattering terms to what he had himself observed when visiting Hamburg of the very admirable methods employed in the teaching of tropical medicine at that school.

Dr. D. E. ANDERSON (London) gave some notes on "Uta," a disease found in Northern Peru in districts where "verruga" is also endemic. The specific organism has not yet been found nor the vector, but it is conjectured that the infection reaches man probably by means of a sting from some insect on the hands or feet. The malady resembles lupus in a number of respects, and leaves in many cases disfiguration of the mouth and nose.

The subject was further discussed by Professor FÜLLEBORN and Dr. SAMBON.

Dr. SANDWITH, in closing the section, said a few words in reference to the great success which had marked the establishment for the first time of a Tropical Medicine Section at the present International Congress of Medicine. The important discussions had drawn together many eminent men of all nations, and the meetings had been crowded at all times. There had been no lack of interest. He recalled the previous International Congress held in London in 1881, and to the "giants" of medicine who had attended it, including Pasteur, Virchow, Koch, and others. In conclusion, he observed that the gratifying success of the new section at the Congress was greatly due to the sustained and untiring efforts of, and the preparations made by, the secretaries during the past three years, and especially by Dr. A. G. Bagshawe.

The session then terminated.

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## SECTIONS XXI. AND XX.—JOINT SESSION OF THE SECTION OF TROPICAL MEDICINE AND HYGIENE WITH THE SECTION OF NAVAL AND MILITARY MEDICINE.

### SATURDAY, AUGUST 9TH.

The Saturday sitting, which was presided over at first by Surgeon-General Sir DAVID BRUCE, C.B., A.M.S., and later by Director-General Sir C. P. LUKIS, I.M.S., was held at the Royal Army Medical College, the subject down for discussion being

*Sanitary Organisation in the Tropics.*

This important discussion was opened by Sir RONALD ROSS, K.C.B. (Professor of Tropical Sanitation, University of Liverpool), who defined the principal points that should be considered. He used the term sanitation in its widest sense to include everything which tended to reduce the sickness and mortality of human beings. He advocated the unification of all the sanitary services in a country and maintained that separation of the various sub-branches resulted only in imperfect administration, overlapping, and waste of money. The sanitary service should be represented on the supreme governing body, and the head of the combined medical

department should be called the director of sanitary and medical services, without subordinating one of these branches to the other. The position of the engineering department to the medical was next dealt with, as also research work, the statistical department, the sanitation of municipalities, the management of epidemics, the sufficiency of local staffs, the provincial delegation of sanitary authority, and committee government.

Stabsarzt Dr. HINTZE (German Colonial Medical Service) then described "Die organisation des Sanitätswesen in den Deutschen Kolonialen Africas und der Südsee," giving details of the composition of the *personnel* of that force, their duties, &c. (An abstract of this paper was given in THE LANCET of August 2nd.)

Colonel P. HEHIR, I.M.S. (Assistant Director of Medical Services, Burma Division), then gave an account of the sanitary organisation of our army in India. This organisation he regarded as the most comprehensive and practical, as well as the most efficient in existence in the tropics, presenting in his opinion a model which other nations might well follow. By its efforts there had been, during the last 30 years a most remarkable reduction in the sickness and mortality rates among soldiers in India. He admitted that medical and sanitary officers had often delicate duties to perform, and that it was necessary to respect the prejudices of local troops, these prejudices being often associated with religious ceremonial and the traditions of centuries which had to be respected. (A brief extract of this paper also appeared in THE LANCET of August 2nd.)

Two other speakers whose names had been placed on the programme to take part in the discussion, Dr. A. Plehn (Berlin) and Professor E. Sergent (Algiers), were unfortunately absent.

Among those who afterwards spoke were Colonel W. G. KING, I.M.S. (retired) (late Sanitary Commissioner for the Madras Presidency), Professor v. WASIELEWSKI (Heidelberg), Dr. A. AGRAMONTE (Habana), Dr. C. BLACK (Western Australia), Dr. F. M. SANDWITH (London), Dr. C. F. HARFORD (Livingstone College, Leyton), Dr. G. OLPP (German West Africa), Dr. D. E. ANDERSON (London), and Dr. A. BALFOUR (London, late of Khartoum). The last-named speaker supported "with heart and soul" all the points put forward by Sir Ronald Ross, and speaking of sanitary "troops" he urged the need for efficient "non-commissioned officers"—that is, sanitary inspectors, all of whom before engagement in the tropics should undergo suitable training in tropical sanitation. In his opinion everything depended on the carrying out of *minutiæ* in the tropics.

After Sir R. ROSS, Dr. HINTZE, and Colonel HEHIR had replied, a resolution was proposed by Colonel KING to the effect that the section considered that it would be advantageous in fully administered tropical countries that the chief sanitary officer should not be subordinate to other departments, but only responsible to the Government itself. The resolution was seconded by Sir R. ROSS, and debated by Dr. AYRES KOPKE (Portugal), Colonel B. SKINNER, R.A.M.C. (London), Major W. GLEN LISTON, C.I.E., I.M.S., and Sir C. P. LUKIS, but at the suggestion of the last-named speaker it was, as relating to a civil matter, withdrawn for further consideration when the Tropical Medicine and Hygiene Section would be free to deal with it.

Colonel HEHIR then read a paper on the Prevention of Malaria among Troops in India, which was discussed briefly by Dr. MALCOLM WATSON (British Malaya).

The last item on the programme was a contribution by Dr. J. J. VAN LOGHEM (Director of the Institute of Tropical Hygiene, Amsterdam) on

*The Yellow Fever Danger in Asia after the Opening of the Panama Canal.*

The author, on account of his own personal experiences of the frequency of stegomyia in the Dutch East Indian Archipelago and on board ships trading between Dutch East Indian ports, was of opinion that the danger of yellow fever being transported to Asia and Australia was a very real one. He thought that an attempt should be made to secure international coöperation with a view to appoint a commission to study the subject and to formulate a scheme for international action against the danger of yellow fever spreading across the Pacific. He concluded his paper by proposing a resolution in the above sense, and this was seconded by Dr. AGRAMONTE.

An amendment was moved by Sir PATRICK MANSON (London), who, though fully convinced of the reality of the danger, deprecated moving at present in the direction suggested by Dr. Van Loghem. His suggestion was rather that the matter should be brought by the various societies of tropical medicine to the notice of the governments concerned, to whom some scheme might be submitted showing how the danger could be minimised if not prevented. The amendment was seconded by Dr. HARFORD, who made the suggestion that the question might also be put before the International Society of Tropical Medicine. Dr. SANDWITH supported the amendment, which was ultimately carried by a majority of votes.

## THE EXHIBITION.

(*Concluded from p. 500.*)

### III. *Drugs and other Therapeutic Agents.*

Demonstrations in this section of the exhibition are no longer confined to mere chemicals. There must always be a physiological side so long as the developments of organotherapy, which involve the preparation of cultures, toxins, antitoxins, and so forth, promise to render valuable service to medical science. Consequently there is rarely a stall in this section of the exhibition which is without its interesting collection of sera, tuberculins, vaccines, and cultures.

One of the most comprehensive exhibits in this connexion was that of Messrs. Burroughs, Wellcome, and Co., of Snow Hill Buildings, Holborn Viaduct, London, E.C., who had four artistic stalls occupying the large vestibule of the Imperial Institute Buildings as well as cases in the main entrance corridor. The exhibits were divided into five groups as follows: (1) pharmaceutical preparations and fine chemicals; (2) first aid and medical equipments; (3) surgical appliances and instruments; (4) physiological section; and (5) a materia medica farm exhibit. Admiration was very freely expressed for the general excellence of these large exhibits. More particularly was the thoroughness appreciated with which the pharmaceutical and chemical substances were prepared. There were here shown alkaloids, fine chemicals, synthetic compounds, resinoids, and neutral principles. Many of the medicinal substances gave evidence of the attention devoted to special research work which has led to their elaboration. In the physiological section, again, the attention given to standardisation was remarked. Principles represented in ernutin, epinine, and infundin were exhibited. The collection was altogether most instructive. Another very interesting exhibit reminding us of recent developments of pharmacology was that of Messrs. Comar et Cie, whose London depôt is at 64, Holborn Viaduct, E.C. They exhibited a series of preparations illustrating the present state of colloidal treatment. There was a series of electrically prepared colloids and chemically prepared colloids, as well as complexes containing more than one element. The exhibit demonstrated that practically all the metals can be presented in colloidal form and the bactericidal and antitoxic properties of these ultra-microscopic "grains" are remarkable.

Mr. W. H. Martindale, of 10, New Cavendish-street, London, W., in addition to a great variety of special pharmaceutical preparations, introduced to largely interested audiences "sensitised vaccines," which are said to differ from the ordinary vaccines in the fact that in the course of preparation the specific antibodies contained in the corresponding antisera are combined with the bacillary substance. Messrs. Parke, Davis, and Co., of 50, Beak-street, Regent-street, London, W., directed attention to the history of treatment by vaccines and antitoxins. The last addition to the list is seen in the phylacogens, of which there are five varieties, used in rheumatism, mixed infection, gonorrhœa, erysipelas, and pneumonia. Each of these is described as consisting of a sterile aqueous solution of the metabolic derivatives of a number of pathogenic organisms, with a predominance of those of the respective specific organism. The firm also showed some ingenious and convenient medicine cases and chests, while illustrations were given of the remarkable hydrolytic power of taka-diastase, which appears to be useful in amylaceous dyspepsia. Amongst novelties shown by the Saccharin Corporation, Limited, of 10, Arthur-street, London, E.C., was a dry preparation of malt. This is a crystalline powder which shows, notwithstanding, a very high diastatic value. In addition there were specimens of pergenol, an interesting and useful compound which on

dissolving in water gives peroxide of hydrogen and boric acid. The chief interest on the stall of Messrs. Prunier, of 6, Rue de la Tacherie, Paris, centred round a special preparation of glycerophosphate of lime. It was presented in granular form, in an elegant syrup, and also in cachets. The Hoffmann-La Roche Chemical Works, of 7 to 8, Idol-lane, London, E.C., exhibited specimens of their alkaloids and fine chemicals. There were thus omnopon presenting in a soluble form the total alkaloids of opium, and digalen, a standard preparation of digitalis which is said to be uniform in glucosidal contents, and therefore to be constant in regard to therapeutic effect. The exhibit of medical interest at the stall of Messrs. Humphrey Taylor and Co., Limited, of 45, New Oxford-street, London, W.C., was lecithin, made from the yelk of eggs, to the manufacture of which this firm has evidently given special attention, with the view of isolating the phosphatide in a pure state. Messrs. Reynolds and Branson, of Leeds, had a miscellaneous collection, including surgical apparatus, photographic apparatus, and urine testing apparatus, but there were besides a large number of elegant pharmaceutical preparations, including physiologically and clinically tested preparations of digitalis and ergot.

Messrs. Fairchild Bros. and Foster, of 64 and 65, Holborn Viaduct, London, E.C., showed "enemōse," a fluid nutrient designed for colonic alimentation, a preparation of holadin and bile salts, holadin itself possessing great tryptic activity, and the glycolytic extract of pancreas called hormonadin. There were several combinations of active malt extract with pharmaceutical preparations, as, for example, cod-liver oil, cascara sagrada, pepsin, and pancreatin in the Maltine products of the Maltine Manufacturing Co., Limited, of 24 to 25, Hart-street, Bloomsbury, London, W.C. Carnrick liquid peptonoids were also shown at this stall. This is an agreeable preparation containing predigested beef, milk, and wheat, which has been used with advantage during critical stages of severe illness. We have already described the endolytic tubes for urine testing, which were demonstrated on this occasion by Messrs. E. J. Reid and Co., of 17 and 18, Basinghall-street, London, E C. The tubes are capillary, in which is sucked up at one end the reagent and at the other the urine. At the point of contact any reaction can be seen. The test is a delicate one and very convenient for clinical work. The Denver Chemical Manufacturing Company, of 41, St. Ann's-road, Bow, London, E., exhibited specimens of their valuable antiphlogistine, which has stood a long trial as a soothing external application, and has rendered in many cases the old-fashioned poultice a thing of the past. Besides their well-known anæsthetics, which have a reputation for purity, Messrs. Duncan, Flockhart, and Co., of Edinburgh and of 143, Farringdon-road, London, E.C., exhibited specimens of a sterilised 20 per cent. extract of the posterior lobe of the fresh pituitary body. There were also shown examples of desiccated thyroid gland containing definite doses of fresh substance. There were some interesting preparations at the exhibit of Messrs. Rouse and Co., of 12, Wigmore-street, London, W. Their apparatus for producing spray and fine powder was evidently a special feature of the exhibit; the nebulisers and the insufflator are very effective in producing a fine cloudy vapour and a smoke of fine powder respectively. The exhibit included a palatable petroleum product called lenitol, which on account of its purity is suitable for internal use in the treatment of constipation. Messrs. E. T. Pearson and Co., Limited, of 49, Watling-street, London, E.C., exhibited vasogen preparations. Vasogen, which consists chiefly of oxygenated hydrocarbons, appears to be an excellent vehicle for, amongst other things, iodine, creasote, iodoform, sulphur, salicylic acid, and guaiacol. The exhibit also included lactagol, extracted from cotton-seed, which is claimed to be a tried and proved galactagogue.

In addition to their well-known food and peptonised milk preparations Messrs. Savory and Moore, Limited, of 143, New Bond-street, London, W., exhibited an elegant magnesia compound, a hydrocarbon jelly called fructolax, and a special preparation containing glycerophosphates and red bone marrow known as fructol. We have already referred in our analytical columns to their antiseptic tooth-paste known as aphrodont which, while being a germicide, produces an agreeable cleansing foam in the mouth. A somewhat novel exhibit was that of the Radium Water and Food Products, Limited, of 152, Fulham Palace-road, Hammersmith, London, W. This consisted of table waters in syphons under pressure of carbonic acid gas which contained radium emanation. It is stated that these radionic waters are prepared from pure radium salts, and they are guaranteed to be permanently radio-active. Specimens of Angier's emulsion were shown at the stall of the Angier Chemical Co., Limited, of 86, Clerkenwell-road, London, E.C. This is a combination of a specially refined petroleum with hypophosphites. This emulsion of petroleum was introduced many years before the hydrocarbons of petroleum became fashionable in the treatment of constipation. The British Organotherapy Co., Limited, of Carlton House, Lower Regent-street, London, S.W., exhibited a number of interesting organo-therapy products which have found a definite place in the treatment of various nervous and mental conditions. The preparations shown included lymphoid compound (Lowenthal), lymph serum (Lowenthal), and a ovamammoid (Lowenthal). According to quoted testimony these preparations appear to have given good results in neurasthenia. There was a number of very interesting exhibits at the stall of Messrs. Charles Zimmermann and Co., of 9 and 10, St. Mary-at-Hill, London, E.C. There was, for example, lenicet, a dry form of aluminium acetate which is particularly useful for exsiccative and cleansing purposes; azodermin, used for promoting granulations of the skin, and aphrodine, the active aphrodisiac principle of Yohimbehe bark. The visitor's attention was also called to a portable radium emanatorium for installation in hospitals or sanatoriums. In this apparatus the emanation is set free by passing a current of oxygen through a group of cylinders in which the radio-active substance is contained. Radiogen drinking water and bath water are also obtainable, and radiogen compresses for the treatment of rheumatism. The exhibit included rheumasan, a superfatted soap containing free salicylic acid for inunction in the treatment of rheumatism. The absorption of salicylic acid is seen in its rapid appearance in the urine.

Amongst the many elegant pharmaceutical preparations in the exhibit of Messrs. C. J. Hewlett and Son, of 35 to 42, Charlotte-street, London, E.C., may be noted the useful evapogens, medicated skin lotions which rapidly evaporate; ioderniol, a preparation of iodine which does not stain or irritate, and a series of physiologically standardised preparations. Mr. Frank A. Rogers, of 327, Oxford-street, London, W., presented to view a number of standard sprays, atomisers, and so on, which exhibited ingenuity in design and construction, rendering them admirably adapted for the purposes indicated. There were thus sprays for nose or throat, and modifications for laryngeal and post-nasal use. The pocket Kloram inhaler is a very effective producer of ammonium chloride cloud. The production is not only copious, but the vapour is neutral and can be obtained at a moment's notice. The whole apparatus can easily be carried in the pocket. The most novel introduction on the stall of Messrs. A. Wulfing and Co., of 12, Cheniesstreet, London, W.C., was cystopurin, which is described as a double salt of hexamethylene-tetramine and sodium acetate. This double salt has been spoken of very favourably in the treatment of tuberculosis of the urinary tract, the compound breaking up into, amongst other things, formaldehyde, which exercises a disinfecting action on the urinary passages. The presence of sodium acetate in the molecule appears to secure a specific effect, whether the urine is ammoniacal, alkaline, or neutral. The diuretic action of the compound is an obvious advantage. At the same stall were the well-known preparations albulactin, sanatogen, and formamint. There were certain preparations which have established themselves as adjuncts to practice in the exhibit of Darrasse Frères, 13, Rue Pavée, Paris, as, for example, the laxative Tamar Indien and the convenient sinapisms (Rigollot). In addition, there were tablets and powders for the cultivation of the lactic acid bacillus. There were many interesting pharmaceutical preparations at the stall of the J. D. Riedel Company, of 13 and 14, Walbrook, London, E.C. Specialities occur in the standardised active principle of the valerian root called bornyval. This principle is sedative in action and is conveniently combined with the well-known purgative phenolphthalein under the name of aperitol. Recent improvements in the preparation of bornyval have made it a tasteless and odourless substance.

Glycerophosphates and hypophosphite compounds were a feature of the exhibit of the Anglo-American Pharmaceutical Co., Limited, Galen Works, Dingwall-road, Croydon. Combinations were exhibited with the formates

and hæmoglobin, quinine, and so forth. Radium, Limited, of 93, Mortimer-street, London, W., exhibited some interesting materials and apparatus for administering radium emanations. This included a drinking water apparatus and an inhalation apparatus providing air charged with the emanation. There was also shown radio-active earth to be used as a dry compress in sciatica or rheumatism. In addition to a number of interesting pharmaceutical preparations and many useful sanitary specialities, Messrs. Southall Brothers and Barclay, Limited, Birmingham, laid some stress on their new preparation Vitafer, which we have already shown in our analytical columns to be a satisfactory combination of the proteins of milk with the glycerophosphates of magnesium, calcium, and sodium. A model apparatus was shown illustrating the process of manufacture and the care taken to secure pure materials. The Icthyol Company, of Hamburg, showed a number of interesting preparations bearing that name. Icthyol may be fairly regarded as the prototype of organic sulphur preparations. We have recently shown how the sulphur is distributed in the compound. It appears, at any rate, a distinct advantage to use icthyol in the treatment of skin diseases, while recently its internal administration has appeared to give good results, because it promotes nutrition in the treatment of tuberculosis. Icthyol is a standard organic sulphur compound in which the general pharmacological properties of sulphur may be depended upon. Messrs. Thomas Christy and Co., of 4 to 12, Old Swan-lane, Upper Thames-street, London, E.C., showed a variety of exhibits, including a special surgical tissue, having advantages, it is stated, over oil silk and guttapercha; glycothymoline, a useful antiseptic employed in catarrhal conditions; and ergoapiol, a combination of ergot and apiol. There were some novelties to be found on the stall of the H.K. Mulford Company, of Philadelphia and New York, who showed an interesting series of sera, antitoxins, and vaccines, and some ingenious pharmaceutical preparations. Amongst these were cremo-bismuth, a suspension of finely divided basic carbonate of bismuth in distilled water, a colloidal silver oxide called cargentos, and a liquor antisepticus containing benzoic acid and formaldehyde.

### IV. *Special Foods.*

For the most part the special foods exhibited were well known, and we give preference here to those which appear to us to possess some claim on the ground of recent introduction. Diabetic foods were well represented at the stall of Messrs. Bonthron and Co., of 50 and 52, Glasshouse-street, London, W., who exhibited a good many food preparations, breads, biscuits, jams, jellies, &c., which either contained no starch or sugar at all, or a considerably reduced quantity. The specimens shown offered a wide choice in regard to deciding upon foods free from carbohydrates. Similarly a large assortment of starchless and sugarless foods was exhibited by Messrs. Callard and Co., of 74, Regent-street, London, W. Glaxo deserved attention as a standard desiccated milk containing solids of whole milk in a soluble form. The preparation contains a full complement of milk fat, and the albumin is modified in such a way as to render it easily digestible. The exhibitors were Glaxo, of 45 and 47, King's-road, St. Pancras, London, N.W. Messrs. Menley and James, Limited, of Menley House, Farringdon-road, London, E.C., exhibited chiefly their glidine preparations, glidine being described as a protein food prepared entirely from wheat. There were shown also a number of combinations of glidine which represent organic compounds of iodine, bromine, iron, and so forth. The St. Ivel Company, Limited, of 33, Park-road, Battersea, London, S.W., exhibited a lactic cheese which contains lactic acid cultures calculated to prepare the curd for easy digestion. There was shown, too, visem, a preparation of casein, lecithin, and glycerophosphate of soda, which also contains the enzymes and lactalbumin derived from whey evaporated in such a manner as not to destroy the vitality of its constituents. There was an interesting display of digestive ferments, peptonising powders, and related preparations at the exhibit of Messrs. Armour and Co., Limited, of Atlantic House, Holborn Viaduct, London, E.C. Special attention is devoted by this firm to the preparation of enzymes of guaranteed activity. There were also shown a concentrated beef beverage known as vigoral and vigoral cubes. Specimens of lecithin may be added to the list, the phosphatide having been separated from fresh brain substance. Recent developments in regard to gluten foods for diabetic patients were illustrated at the stall of Messrs. G. Van Abbot and Sons, of Baden-place, Crosby-road, Southwark, London, S.E. These included bread, biscuits, and flour. There were also preparations of almond flour and foods suited to cases of obesity. There were some interesting milk preparations shown by Casein, Limited, Battersea, London, S.W., amongst them being secwa, which represents milk whey in powdered form and dried in a manner which preserves the activity of the enzymes and leaves the albumins uncoagulated. They also showed a "true milk" powder which contains the whole constituents of milk preserved in "live" form by the same process.

### V. *Sanitary Appliances.*

There were several sanitary appliances which elicited particular attention. Messrs. Doulton and Co., Limited, of Albert Embankment, Lambeth, London, S.E., for example, exhibited models of the sanitary appliances which they are providing for King's College Hospital. These included a specially designed sink, lavatory, closet, and bedpan sink, adapted particularly for hospital use. The hospital sink is made of fire clay and has all parts visible and easily accessible so that there is small chance of decomposing matters to collect. All through these appliances have been designed with an acute regard to hygienic requirements. Messrs. Slack and Brownlow, of Abbey Hey, Gorton, near Manchester, exhibited their germ filters which have stood the test of bacteriological experiment. Amongst the examples shown were a tourist's filter, a traveller's pump, and a hospital filter, with thermometer attached, providing hot and cold sterile water of any temperature for surgical requirements. Mr. John Henry Moore, of Woodstock-road, Oxford, exhibited a model of his "squat-inclination" water-closet. The object of the invention is, of course, to obtain an angle of natural and easy defæcation for persons suffering from piles, constipation, and hernia, and at the same time to safeguard others against similar complaints. Amongst sanitary fluids shown were those of the Jeyes' Sanitary Compounds Co., Limited, of 64, Cannon-street, London, E.C. (cyllin); izal, by Newton Chambers and Co., Limited, including some useful preparations containing this germicide; and hycol, of Pearson's Antiseptic Co., Limited, of 15, Elm-street, London, W.C.

### VI. *Mineral Waters and Beverages.*

There were quite a number of natural mineral waters shown, including those adapted for table and medicinal use. We have already given instances of waters being prepared saturated with radium emanation. Messrs. Ingram and Royle, of Bangor Wharf, 45, Belvidere-road, London, S.E., exhibited specimens of almost every well-known continental mineral water—still, sparkling, and medicinal. The Vittel Mineral Water Company, 12, Mark-lane, London, E.C., brought to notice the applications of the Vittel waters, which are mildly alkaline and practically free from salt. Specimens of Royal Fachingen mineral water and of Seltzer's natural mineral water were shown at the stall of the Royal Mineral Springs Company, of 6, Great St. Helens, London, E.C., while close by Mr. Elkan Erben, of Berlin, with an English agency at 63, Corporation-street, Manchester, described the ozet bath, which depends for its therapeutic efficiency upon the production of oxygen in the nascent state. The Hygienic Syphon and Carbonator Company, of Ogle-street, London, W., exhibited specimens of their hygienic syphon, which is correctly so-called inasmuch as there is no metal in its composition, this being replaced by porcelain. They showed also some very neat apparatus for making effervescent waters and beverages. Messrs. Hertz and Co., of 9, Mincing-lane, London, E.C., exhibited, amongst other things, some pastilles containing the salts of Ems mineral waters, obtained by a special process of evaporation. These waters have some repute in alleviating certain catarrhal condition, and to the salts are ascribed these therapeutic effects. Specimens of the Malvern waters, which are noted for their extreme purity, were exhibited by Messrs. W. and J. Burrow, of The Spring, Malvern, Worcestershire, and the advantages of Malvern as a health resort were brought to the notice of the visitors in a series of books and illustrations.

### VII. *Literature.*

The display of recent medical literature was a decided feature of the exhibition, and it was obvious that many of

the professional visitors appreciated the opportunity of looking through the recent additions to the list. Amongst the publishers who were represented were the following:—Messrs. Balliére, Tindall, and Cox, Messrs. Henry Frowde, and Hodder and Stoughton, Mr. Edward Arnold, Messrs. Rebman Limited, Mr. H. K. Lewis, Messrs. J. B. Lippincott Company, Messrs. Cassell and Co., Limited, Messrs. W. B. Saunders Company, and Messrs. Adlard and Son. The Research Defence Society also had a stall on which books, pamphlets, booklets, and leaflets were placed, giving the facts as to experiments on animals in this country and the regulations under which they are conducted.

# Reports and Analytical Records FROM THE LANCET LABORATORY.

## FERROCARNIS.

(BRAND AND CO., MAYFAIR WORKS, 74 TO 84, SOUTH LAMBETH-ROAD, VAUXHALL, LONDON, S.W.)

ACCORDING to our examination, this fluid preparation is an organic combination of iron with raw meat juice. The composition of the preparation is established by the following observations. The fluid on heating coagulates, due to separation of unaltered albumin. The fluid diluted with water shows the hæmoglobin spectrum. The ordinary precipitants of iron give no response except caustic soda and sodium sulphide. The moisture amounted to 46·67 per cent., so that the total solid matter was equal to 53·33 per cent. The total mineral matter amounted to 12·53 per cent., and this was loaded with oxide of iron derived from the organic compound. On estimation the iron proved to amount to 3·85 per cent. in terms of ferric oxide. The total nitrogen amounted to 3·02 per cent., equal to 19·07 per cent. protein. The preparation may be correctly described as a tonic nutrient exhibiting iron in a form which is well tolerated and an effective hæmatinic.

## VERONIDIA (BUISSON).

(LONDON AGENCY: T. K. GRANT, 89, GREAT RUSSELL-STREET, LONDON, W.C.)

Veronidin is a dark brown solution with a pleasant, if liquorice-like, flavour. According to our examination, it contains veronal in the free state and uncombined with alkalies. There are present also glycerine and alcohol. This special combination of veronal is regarded as an improvement upon ordinary preparations of this hypnotic, inasmuch as its administration is without unpleasant after-effects. It is claimed to have a particularly sedative effect in cases of irregular menstruation, hysteria, and epilepsy, but, of course, its employment must be left absolutely to the discretion of the physician. We had no difficulty in recognising the presence of veronal in this fluid. The question of its non-toxic action which is claimed must be decided by reports upon individual cases of its administration.

## CIDER.

(THE QUANTOCK VALE CIDER COMPANY, LIMITED, NORTH PETHERTON, BRIDGWATER.)

We have made a complete analysis of a sample of cider to which is given the title of "Doctor's Vintage." The claim that it is "extra dry" is supported by our analysis, since the sugar amounted to only 0·52 per cent., which is the lowest quantity found in any ciders which we have so far examined. The cider is quite "dry" to the palate, and yet is free from disagreeable tart flavour, the acidity also proving to be very low—viz., 0·16 per cent. calculated as malic acid. The beverage was in sound condition, and one of the most agreeable "apple wines" we have tasted. It possesses a clean delicate flavour. The alcohol amounted to 5·78 per cent. by volume, the total extractives to 1·98 per cent., and the mineral matter to 0·28 per cent.; the volatile acidity regarded as acetic acid amounted to only 0·09 per cent. We could find no objectionable preservatives present. We have also examined a specimen marked "dry." The sugar in this case amounted to 2·27 per cent., and in a specimen marked "sweet" the sugar amounted to 4 per cent. With more sugar present there was a correspondingly smaller amount of alcohol.

## MALTWHEAT BREAD.

(R. WINTER, LIMITED, BIRMINGHAM.)

This bread is made with a large proportion of the soluble principles of malt. It accordingly contains a notable amount of malt sugar and dextrin, while proteins occur in considerably larger quantity than in ordinary bread. The bread is somewhat soft and sticky in texture owing to its richness in malt products. No less than 39 per cent. of the loaf is soluble in cold water. The moisture amounted to 34·65 per cent., the malt sugar to 14·0 per cent., the dextrin to 18 40 per cent., the proteins to 10·20 per cent., the starch by difference to 19·20 per cent., the bran to 2·60 per cent., and the mineral matter to 1·0 per cent. The mineral matter contained about a third of its weight of phosphoric acid present as the potassium salt. The bread has a marked malty flavour, and there can be no doubt of its superior nutritive value. It is adapted, however, more for special than for general use.

## EAU DE COLOGNE "4711."

(FERDINAND MÜLHENS, RUE DE LA CLOCHE, No. 4711 COLOGNE. AGENCY: 567, DENMAN-STREET, PICCADILLY CIRCUS, LONDON, W.)

Eau de Cologne has a limited use in medicine, but, of course, a wide application in perfumery. It is valued for its cooling effects due to the evaporation of its alcohol, while the presence of genuine essential oils makes its use agreeable. In every well-to-do household it is known that eau de Cologne will often relieve pain, and especially headache due to vascular dilatation and throbbing, and that as a lotion it is very agreeable to use sponged on the skin when it diminishes perspiration. The specimen submitted to us has an attractive fragrance, and yields on suitable treatment a large proportion of sweet-smelling essential oils. Considerable emphasis is made by the makers in regard to the purity of the essential oils used, which include the famous oil of Neroli (oil of orange), which is the natural oil and not the synthetic preparation. Their preparation is a very elegant one with peculiarly agreeable fragrant odour.

## (1) HELMITOL CO; AND (2) HYDRASTININE HCl.

(THE BAYER COMPANY, LIMITED, 19, ST. DUNSTAN'S-HILL, LONDON, E.C.)

We have referred before in our analytical columns to the value of helmitol as a urinary antiseptic, and we have published reports in our clinical columns recording its usefulness in acute pyelitis, pyelonephritis, and suppurative urethritis. It has since been suggested that in cases of urinary disorders in which an acid urine is desired it would be an advantage to administer helmitol with acid sodium phosphate. This combination is stated to have procured rapid improvement in bacillus coli cases and in gonorrhœa. When an alkaline condition is desired helmitol may be given with potassium citrate or acetate. Helmitol breaks up in the body, liberating formaldehyde. 2. Hydrastinine has now been synthetised and the artificial product appears to be identical with the alkaloid obtained by oxidation from the hydrastine of the rhizome of hydrastis canadensis. Synthetic hydrastinine shows a definite composition which implies that it can be administered on sound posological lines. The hydrochloride is a white powder soluble in cold water. It is a powerful hæmostatic which has been used in obstetric practice, while it is said that the synthetic preparation is less depressing to the heart than the galenical.

# THE LANCET.

*LONDON: SATURDAY, AUGUST 23, 1913.*


## Development of Preventive Medicine, and its Application to Venereal Diseases.

IN his instructive and encouraging address to the general session of the International Congress of Medicine, which we printed in full in our last issue, Mr. JOHN BURNS took a wide survey of the causes which have been at work to produce the striking reduction in rates of mortality which is shown by the figures of the last 40 years, and emphasised the great part which may be played by efficient medical treatment of the individual in reducing the prevalence of communicable diseases. This aspect of preventive medicine has been freely discussed in recent years, particularly in connexion with the introduction of the medical inspection of school children, with the medical provisions of the National Insurance Act, and with other means by which the provision of medical treatment among large classes of the population has been brought under the control or supervision of Government departments or local administrative bodies. For some communicable diseases the prompt treatment and cure of the individuals attacked cannot receive the most important place among measures of prevention. The great achievements of State medicine in this country have in these cases been obtained by other means. It would be far from satisfactory, for example, that preventive action in the case of such diseases as cholera or enteric fever should be concentrated on attempts to remove the infectivity of the individual patient or carrier case, to the exclusion of the study of the epidemiology of the disease and the application to the whole community of sanitary measures based on knowledge of the circumstances and conditions in which infection may be conveyed from the sick to the healthy. This may be said also of tuberculosis, without denying the effect which must be produced on the prevalence of the disease by curative measures which reduce the number of persons capable of infecting others. On the other hand, syphilis and gonorrhœa may be instanced as diseases in the prevention of which, for various reasons, ordinary methods of public hygiene are inapplicable, and where special restrictive legislation, in this country at all events, must be regarded as outside the range of practical politics. Here, however, we are dealing with diseases of which the conditions of transmission are closely circumscribed and well understood, and we are now in position to say that if the person attacked is taken at the right time his ability to infect can be rapidly, and it may be permanently, removed, a proceeding equally in his own interest and in that of the public. It is natural, therefore, that a demand should arise for public action for the prevention of venereal diseases which should take the form, not of penal measures, but of giving venereal cases ample opportunity to obtain modern methods of diagnosis and treatment, and to persuade them to make prompt use of it. Prevention and cure, in such circumstances, go hand in hand, and in view of the dire results of these diseases no effort should be spared that gives promise of diminishing their prevalence in a practicable manner.

IN THE LANCET of June 28th we published and endorsed a powerful appeal from Sir MALCOLM MORRIS for public consideration of the prevalence of syphilis, the manner in which it is still being spread broadcast, and the measures which should be taken to combat the disease. The awakening of public attention in this direction has been already rapid and highly encouraging. The attention given to Professor EHRLICH'S work on Salvarsan was among the most prominent features of the International Congress of Medicine, where it was made clear from the experience of observers from all parts of the world that the introduction of this remedy has placed the cure of syphilis and the question of destroying the infective ability of the syphilitic case on a new basis far more hopeful than heretofore. The subject generally has now received wide attention from the lay press; questions of State action have been pressed on the Government by Members of the House of Commons; and at the conclusion of the session the Prime Minister announced that an inquiry into venereal disease had been determined upon, presumably by means of a Royal Commission. The publication is therefore very timely of the results of an inquiry[1] which has been for some time in progress at the Local Government Board into the nature and extent of the provision made for venereal cases at general and special hospitals and in Poor-law institutions. This inquiry was made by one of the medical inspectors of the department, Dr. R. W. JOHNSTONE, and many of its principal points will be found in a summarising article in this issue of THE LANCET. But the report itself should be obtained and studied by all who are interested in the movement to which we have referred.

In order to consider the entire question of institutional provision in proper perspective Dr. JOHNSTONE has thoughtfully and concisely reviewed the general question of public action for the repression of venereal diseases, and his report should be of great value to the promised Royal Commission by bringing the principal matters into manageable compass and clearing the way for early consideration of practical issues. His conclusions are against any repressive legislation of the type of the former Contagious Diseases Acts, but are strongly in favour of concerted action "to get a willing patient at the earliest time to the doctor from whom, or the institution from which, skilled advice and adequate treatment is to be had." For the bulk of the population the general hospital, rather than the special institution, should in his opinion be looked to for the treatment of the venereal case, but under a system far more thorough and comprehensive than is at present attempted in these institutions. It is of course by no means certain that

[1] Report to the Local Government Board on Venereal Disease. By Dr. R. W. Johnstone. With an introduction by the Medical Officer of the Board. Cd. 7029. Price 2½d. London: Wyman and Sons, Fetter-lane; Edinburgh: H.M. Stationery Office; Dublin: E. Ponsonby; Foreign and Colonial Agent: T. Fisher Unwin, London.

the managements of hospitals supported by charitable contributions would see their way, even if special inducements were offered, to take the part which the report suggests, but it is to be hoped that the governing bodies concerned will lose no time in studying the suggestions which are made and the weighty arguments by which they are supported. In regard to the vexed question of compulsory notification of venereal diseases, Dr. JOHNSTONE concludes that the time is not yet ripe, and that the concealment which would be sure to follow from notification would outweigh its advantages. This view is adopted also by Dr. A. NEWSHOLME in his introduction to the report. One condition of progress on which Dr. JOHNSTONE insists is a franker consideration of the whole subject, in which the importance of its public health aspect is better realised and made the basis of any action which is taken. This attitude, we think, is already being reached by the medical profession and the public alike.

## Tuberculin in the Diagnosis and Treatment of Pulmonary Tuberculosis.

AT the Fifth Annual Conference of the National Association for the Prevention of Consumption and other Forms of Tuberculosis, held in London on August 4th and 5th, an interesting discussion took place on the value of tuberculin in the diagnosis and treatment of pulmonary tuberculosis. Those who took part in the discussion had had extensive experience in the use of tuberculin—some of them from the time when the remedy was first introduced by Professor KOCH. The opinions they have formed are, therefore, worthy of the greatest attention and respect. The majority of the speakers expressed their views with much care and moderation, and in reviewing the results hitherto obtained they believed that tuberculin was a valuable adjunct to the sources available for the treatment of tuberculosis, but they left no doubt that in their opinion it was an error to imagine that by its use alone any great advance could be made against the ravages of the disease. With regard to the diagnostic value of tuberculin there was little difference of opinion. The case against the tests was well summed up by Dr. HECTOR MACKENZIE, whose opening address we publish this week, when he said that the main objection to the use of tuberculin as a help to diagnosis in man was that tuberculous infection was too common, so that the tests do not help to distinguish between active and arrested or healed disease. Professor SAHLI, who submitted to the Congress certain propositions which were stated in THE LANCET recently,[1] was still more emphatic, and maintained that the use of tuberculin for diagnostic purposes ought to be condemned; it was unreliable, both positively and negatively. He further stated that diagnostic injections were dangerous, while the only diagnostic procedure which he advised was the cutaneous reaction with graduated dilutions, when the purpose was not to assist diagnosis in the ordinary sense, but to obtain the determination of tuberculin sensibility in order to fix the proper initial dose for treatment. These views correspond with those held by nearly all the scientific and competent observers all over the world, for owing to the uncertainty of tuberculin reactions no confidence can be placed on the results obtained by their use. It is to be hoped that other more certain tests will be found. The opsonic index method has supporters among those best qualified to estimate the factors involved, and numerous investigations are being carried out with a view to obtaining a test based on fixation of the complement, as in the Wassermann reaction for syphilis.

The opinions of the Conference as to the therapeutic value of tuberculin were guarded. This is not a matter for surprise when the extremely variable nature of pulmonary tuberculosis is considered. The post-mortem records of the general hospitals prove that a considerable percentage of patients dying from other causes than tubercle exhibit arrested or quiescent tuberculous disease in the lungs, of which no history was obtained during life—in other words, spontaneous arrest frequently occurs. Therefore it is necessary to remember, as Dr. MACKENZIE pointed out, that improvement in an "early case" is not necessarily the result of the treatment which has been adopted. It is exceedingly difficult to induce the non-medical world to appreciate this; hence the ease with which quack remedies obtain favour with the unfortunate victims of the disease. Something of this credulity is found amongst medical men, as is shown by the readiness with which the apparently favourable results obtained upon a comparatively few number of cases, watched for the short period of only a few months, are accepted as "cures." To base an opinion formed upon a short series of cases, and to readily adopt the word "cure" in reference to pulmonary tuberculosis, shows that the observer has had but a small experience of the disease. Dr. MACKENZIE was rightly very cautious in his conclusions. He maintained that no one could reasonably uphold tuberculin as a direct cure for tuberculosis, but he thought that it could be claimed that the preparation called into being or stimulated into activity the antagonistic forces inherent in the body for combating tuberculous infection. Professor SAHLI held similar views. He stated that tuberculin treatment had not the character of a true immunisation, though it produced immunisatory effects in the organism. "In actual immunisation," he said, "we try to produce as completely as possible a state (I wish to emphasise the word *state*) of immunity. This is impossible of attainment in tuberculosis. In tuberculin treatment we only look for stimulation and activation of the counteractions of the body at each injection." He concluded by expressing the opinion that treatment with well-diluted tuberculin constituted a real and great therapeutical progress. Here the remarks of Sir JAMES KINGSTON FOWLER were heard with considerable interest.[2] He at once referred to one of the most important points in connexion with the therapeutics of tuberculin—that in considering the value of a remedy in the treatment of any disease it is necessary to be certain that the cases treated are examples of that disease. He said that the only certain test during life that

[1] THE LANCET, August 9th, 1913, p. 379.

[2] THE LANCET, August 9th, 1913, p. 376.

a person is suffering from pulmonary tuberculosis is the presence of tubercle bacilli in the sputum, and that all statements dealing with the value of tuberculin in that disease, which are based upon any other test, are for the particular purpose fallacious. We believe that the great majority of physicians who have had extended experience in the treatment of pulmonary tuberculosis, such as is obtained in the special hospitals for diseases of the chest, will support this limitation of diagnosis. If the cases diagnosed as pulmonary tuberculosis are divided into two classes—those in which tubercle bacilli are found and those in which they are not—the results of treatment in the latter class are remarkably better than in the former. This applies to any form of treatment, whether to the employment of tuberculin, to the routine method of fresh air and good food, or to any drug yet suggested. There are two obvious explanations which might be offered for this: (1) that the cases were not of a tuberculous character; or (2) that when tubercle bacilli are not found in the sputum the disease is not in such an advanced condition, and therefore that the chances of "cure" are more favourable. In order, however, that the latter explanation can be accepted, a more certain diagnostic test for tuberculosis must be established than has at present been introduced, and until this is forthcoming results based on such cases must be taken with the greatest reserve. Sir JAMES KINGSTON FOWLER'S conclusions are a strong indictment of the indiscriminate employment of tuberculin, but he was of opinion that Dr. BARDSWELL'S observations at King Edward VII. Sanatorium at Midhurst justified a continuance of the treatment, provided that every possible precaution was taken against harm being done.

The discussion at the Conference of the National Association for the Prevention of Consumption has once more brought to notice the precautions which must be observed in forming conclusions as regards any treatment of pulmonary tuberculosis. The disease undergoes so many vicissitudes that its manifestations may be mistaken. Some cases tend to spontaneous arrest; others to prolonged quiescence, giving false hopes of arrest, only to break forth into fresh activity after the lapse of months and years; others follow an unfavourable course from the commencement. Therefore, in order to arrive at an opinion on any therapeutic measure, many conditions are required, the most important of which we consider to be the following:—Observation must be made in a large number of cases (extending into hundreds), and the progress of these cases must be watched for at least five to seven years. To treat a patient for a year and then to pronounce the word "cure" will carry no conviction to those who have had a large experience in the disease. Under any suitable treatment, especially in hospitals, where every hygienic and dietetic measure can be adopted, a goodly number of patients will exhibit improvement often very marked; but after a few months their condition is frequently as bad as ever. In order to compare one form of treatment with another it is useless to consider effects after a few months only; the essential point is how many patients out of an extended series continue in good health after the lapse of several years. Further, any treatment under trial should be conducted by several physicians, if possible, so that the observations can be controlled by independent observers. Also, in reports upon any therapeutic measure it must be stated what precautions were taken for diagnosis, while a separate record must be made for those cases in which tubercle bacilli were found in the sputum and for those in which they were not. Unless such precautions are observed no trustworthy conclusions can be arrived at. There are many, however, who will support Dr. MACKENZIE'S statement that the only new form of treatment with any good claim to be a specific which has been brought forward during the last quarter of a century is tuberculin, but it must be administered in a careful and scientific manner, for it is a potent agent for evil as well as for good.

## The Control of Motor Traffic.

THE report of the Select Committee on Motor Traffic was issued last week, and the document contains some observations and recommendations of the utmost public importance. The fatalities chronicled in the report render the whole subject one of urgent medical concern. The Committee was appointed on Nov. 27th, 1912, "to inquire into the circumstances which have led to the large and increasing number of fatal accidents in the metropolis due to motor omnibuses and other forms of power-driven vehicles, and to make recommendations as to measures to be taken to secure greater safety in the streets." The Committee held 42 sittings, and examined 54 witnesses, recognising that the development of mechanical traction has wrought a complete revolution in the conditions of street traffic, with results which have given to the public increased facilities for getting from place to place, but which also have introduced greater risks for the pedestrian. For a time the new dangers of the streets were attributed to the fact that the traffic was mixed, part being horse-drawn and part motor-driven, and the opinion was freely expressed that as soon as the horse traffic was completely eliminated the public would learn to protect itself by a natural process of adaptation in the other conditions imposed by motor traffic—we should, it was thought, cultivate a sense in the new circumstances which would make the chance of accidents less likely than at first sight appeared. Subsequent events have not justified such a view.

There can be no doubt of the popularity of the motor-bus, to use the now accepted abbreviation. The returns placed before the Select Committee give the number of passengers in 1910 as 232 millions, while the estimated figure for this year is more than double that total. In 1910 there were motor services on 100 miles of streets, and there are now motor services on 350 miles of streets. So much for the wide public appreciation of the speedy motor-bus. What has this appreciation cost in the shape of loss of life and accidents? The Select Committee is of opinion that the record of the motor-bus in the matter of all accidents is most unsatisfactory, the total of fatal accidents for motor-buses in 1912 exceeding the total of fatal accidents for every class of vehicle combined in 1905, when the motor was for practical purposes absent from the streets. In

1907 the fatalities from the motor-bus, which now had arrived on the streets, were 35, while in 1912 they were 182, this figure referring to the metropolitan police area and the City. In 1912 the fatalities caused by power-driven vehicles within the county of London numbered 278, of which the motor-bus was responsible for 141, or more than half. Taking the number of motor-buses within the county of London in 1912 as 3000, the number of other licensed public carriages as 11,000, and estimating the private power-driven vehicles as 14,000, a very serious disproportion of fatalities directly due to motor-buses is shown. Two years before, in 1910, within the same area there were 156 fatalities, of which 53, or about one-third, were attributed to motor-buses. The Select Committee compares these figures with those relating to tramways, when it appears that in 1907 the fatal accidents per million miles run on the latter were 0·92, and in 1912 0·45, and the last figure is found by the Committee to work out at little more than one-fifth of the figures of the fatal accidents due to motor-buses in 1912. On the question of accidents this comparison is obviously in favour of the tramway, but it is well to remember that the tramway is an old and tried institution, whereas, as one important witness pointed out, the motor-bus is a new industry; the public is not yet fully accustomed to it, and the proportion of new drivers is very large. To this we may add that the tramcar driver's work is a much easier task than the omnibus driver's, for the former is relieved from the responsibility of steering and of keeping engines under control; he has only to retain his attention fixed on the possibilities of charging some one or something in the line of his gauge. In regard to safety appliances the Committee again makes a comparison between the motor-bus and the tramcar. Guards are being fitted to the sides of the omnibus which already have saved life, "but," in the words of the report, "the great life-saver on the trams is the front guard, and no evidence has been presented to your Committee to show that it has been possible yet to produce for the motor-bus a front guard which is not in itself a source of danger." The comparison between the motor-bus and the tramcar on the point of the safety of pedestrians must always be nullified by the difference of conditions. But the introduction of the motor-bus has brought into light the disabilities of the tramcar, and some believe that omnibuses will eventually supplant altogether the tram system, a further cogent reason being that the omnibus is not restricted to particular routes. Moreover, every day sees additional improvements being made in the construction of the motor-bus, and these improvements will continue, to the advantage of the public convenience, while organisation of traffic should be capable of receiving such attention as will greatly diminish the peril of motor traffic in the streets of the future.

Many of the valuable recommendations of the Select Committee are centred on this crucial point. As examples there may be quoted the observations of the Committee on such questions as the interference to traffic caused by the monopoly of roadway by trams, the desirability of more "refuges," the enforcement of a speed limit, the control of routes, the question of up and down-roads, of increased police powers, and so forth. It remains, however, to secure an authority which, while bearing the question of safety to the public prominently in mind, will not be unmindful of the undoubted convenience to the public which the introduction of the whole system of motor traffic has given. The Committee proposes that in all metropolitan traffic matters Parliament should be advised by one department, which should combine the traffic duties of the Home Office, Local Government Board, and Board of Trade, and that a new traffic branch of the Board of Trade be set up to perform the above and other duties. They suggest also that the veto of borough councils in regard to tramway schemes should be replaced by a full hearing before the new traffic board, which shall report to Parliament; and that county councils in the metropolitan area should have the widest possible powers, subject to confirmation by the new authority which it is proposed should be set up. It is outside our province altogether to discuss any question of politics in connexion with the bodies to which it is proposed to give powers of control in this matter. The public safety is the only thing we have in mind. It would be deplorable if any narrow interests or party advantages were allowed to influence suggestions which are made to bring motor traffic under a system of control that is designed to secure a safer state of the streets. The present risks to pedestrians in the streets of London form a matter of medical urgency, and no time should be lost in minimising them.

# Annotations.

"Ne quid nimis."

## NEW LIGHT ON THE PROBLEM OF PARASYPHILIS.

OF the many fertile discussions which marked the proceedings of the recent International Congress of Medicine one of the most instructive was that held at the last meeting of the Section of Neuropathology, on the nature of the condition known as parasyphilis. For years the medical profession has been taught, and has believed, that tabes dorsalis, general paralysis of the insane, primary optic atrophy—to mention only a few conditions—were diseases to be rigidly separated from cerebrospinal syphilis, inasmuch as though they were almost certainly of syphilitic origin, they were uninfluenced by antisyphilitic treatment, they ran a progressively degenerating course, and in many instances they developed at an extremely long interval after the primary infection. In fact, parasyphilis has always been regarded, in a general sense, as a morbid condition not exactly syphilitic, but postsyphilitic. With the discovery of the spirochæta pallida, however, the situation has been changing, and at the present time views are changing with great rapidity. The mere fact that the Wassermann reaction is positive in 95 per cent. or more of general paralytics is of itself a sufficient reason for regarding so-called "parasyphilis" with suspicion; all analogies suggest that where such a reaction is positive the actual toxic agent cannot be absent or in abeyance. The fact suggests, in short, that general paralytics are actively syphilitic. At the beginning of this year Noguchi described the occurrence of the spirochæta pallida in the brains of some 12 cases of general paralysis out of some 70 examined. Noguchi and Moore also found the organism in the cortex of other cases.

In March, Marinesco and Minea confirmed the observations. In May, Marie, Levaditi, and Bankowski also discovered the spirochæta in the cortex and subcortical tissues of three cases of the disease. Both Levaditi's silver method and the Chinese ink method of Burri were utilised for the purpose. At the meeting of the Psychiatry Section of the Congress at Claybury Dr. F. W. Mott exhibited specimens of the spirochæta in smears from the cortex of general paralysis treated with Indian ink. In one of the cases recorded by Marie, Levaditi, and Bankowski the spirochætæ in the frontal cortex were still actually mobile. Such facts obviously are of paramount importance. They are calculated to revolutionise the accepted opinions on the nature of parasyphilis. At the meeting above referred to Dr. Nonne, of Hamburg, an acknowledged authority on the whole subject, mentioned quite recent experiments in which guinea-pigs had been rendered syphilitic by means of the serum of general paralytics, the spirochæta being recovered in their testicular tissue. At the same eventful meeting of the section Dr. Swift, of the Rockefeller Institute Hospital, said he had just received a further communication from Noguchi to the effect that he had successfully inoculated rabbits with the cerebral substance of general paralytics and had recovered the spirochæta in their tissues. In view of such experimental and pathological data it is little wonder that at the meeting more than one authority expressed the view, which not a few neurologists now are inclined to favour, that so-called parasyphilis is really parenchymatous syphilis—i.e., syphilis of the nerve elements themselves—whereas so-called cerebrospinal syphilis is syphilis of the supporting or interstitial structures. If the spirochæta is found with any regularity and certainty in the brain of general paralytics, why do these not respond to antisyphilitic treatment? It is now known that the spirochætæ lie free in the cortical and subcortical tissue spaces, away from blood-vessels, and that they cannot therefore be reached by arsenic and other medicaments presumably exerting their effects *viâ* the blood stream. For the last two years Dr. Swift has been working in the Rockefeller Hospital at a novel method of reaching the spirochæta in these diseases. An injection of salvarsan is given intravenously to a patient suffering with, say, general paralysis. One hour later his serum is withdrawn, centrifugalised, diluted with saline, heated to 56° C. for half an hour—a proceeding which Dr. Swift has shown greatly increases its spirochæticidal properties—and is injected into the cerebrospinal fluid directly by lumbar puncture. In all but three of 32 cases thus treated Dr. Swift has seen a marked modification of the Wassermann reaction, which either becomes feebly positive or negative. If these results are corroborated it is clear that we shall have to modify our views on the hopelessness of antisyphilitic therapeutics in general paralysis. In any case, the problem of parasyphilis is in a fair way of being solved, and we may well expect that ere long another chapter of neuropathology will have been entirely rewritten.

## THE ALBUMIN REACTION.

THE presence of albumin in the sputum as an aid to the diagnosis of active pulmonary tuberculosis has been credited and discredited by a number of physicians during the past decade. In THE LANCET of August 9th we published a contribution to the subject by Dr. Percy B. Ridge and Dr. H. A. Treadgold. Attention to the literature dealing with the diagnostic significance of albumin in the sputum revealed a degree of confusion as to the interpretation of results obtained on a material of 2000 cases. Dr. Ridge and Dr. Treadgold therefore decided to examine at least an equal number of specimens of sputum themselves with a view to establishing a relation between active pulmonary tuberculosis and the appearance of albumin in the sputum and the pathological condition associated with albuminous sputum. The authors insist on the necessity of discarding all clear mucin and selecting only muco-purulent portions of the sputum for examination. If this precaution is taken they find that 98·9 per cent. of specimens of sputum containing tubercle bacilli also contain albumin. The method also revealed the presence of albumin in the sputum recovered from cases of pulmonary œdema, bronchiectasis, pulmonary neoplasm, lobar pneumonia, broncho-pneumonia, and aneurysm. We are of the opinion that the value of these observations would have been enhanced had the authors carried out a series of tests on groups of patients over a long period in relation to the progress or retrogression of the pathological conditions under the influence of treatment. With reference to the pathological condition associated with the appearance of albumin in the sputum Dr. Ridge and Dr. Treadgold believe that it is of the nature of an alveolitis. They base their opinion on the fact that in specimens containing albumin there is a relative increase in the number of alveolar cells, and that the cases producing this sputum show clinical evidence of consolidation of some portion of the lung. The authors do not state what experimental evidence has led them to this conclusion, nor do they define what they mean by alveolitis or alveolar cells. Much careful investigation is necessary before their conclusions can be accepted as a fact, but they are to be congratulated on an arduous piece of work faithfully performed. Whether the appearance of traces of albumin, associated with a relative increase in "alveolar" cells, in the sputum will eventually be shown to be of significance in the early diagnosis of pulmonary tuberculosis remains problematical.

## RELAPSING FEVER IN CENTRAL AMERICA.

AT the present moment little is heard of the ravages of relapsing fever in Europe, though during last century there were some very severe epidemics in our own country, particularly in Ireland and Scotland. More recently Russia has had some unpleasant experiences of the malady. At one time the origin of this scourge was attributed to famine, but it is now recognised that the malady is a form of spirochætosis and that its spread, in Europe at all events, is associated with the bites of infected lice or bugs, though in America the transmission of the malady is attributed to ticks. During the interesting discussion on relapsing fever which took place in the Tropical Medicine Section of the International Congress of Medicine in London, Dr. S. T. Darling, chief of the laboratory staff of the Isthmian Canal Commission, stated that since the American occupation of Panama the disease had never succeeded in obtaining a foothold, notwithstanding that it had been introduced repeatedly into the Canal zone by labourers from South America, and especially from the adjoining Republic of Colombia, of which Panama at one time formed a part, and where the malady is well known to be endemic. Dr. Darling says that in his experience white men are more susceptible to this disease than the coloured races, the observed attacks being in the proportion of 9 of the former to 4 of the latter. The white man contracts this infection in the same way as he does certain others in the tropics, by his visits to the native villages. It has been established beyond dispute that the specific parasite of relapsing fever in Colombia (as in the United States) is spirochæta novyi, and that its transmission is due to a tick, ornithodoros tourichatus, which infests the huts of the natives; while in Panama, though the parasite is the same, the transmitting agent is a different tick, ornithodoros talaje. Dr. Darling

directs special notice to the fact which, he thinks, has not received sufficient attention—namely, that the forms of relapsing fever met with in Europe, America, and Africa, each due to a different spirochæta (respectively spirochæta recurrentis, spirochæta novyi, and spirochæta duttoni), display differing types of the febrile paroxysm. Some American text-books of medicine, while describing the American form of relapsing fever, give, it seems, illustrative charts of the temperature taken from cases of the European variety of the disease. For this reason Dr. Darling believes that cases of American relapsing fever may be overlooked, and owing to the "spiked" character of their temperature charts may be mistaken for malaria or some other kind of fever. It is probably due to the excellence of the general sanitary measures, carried out in the Panama Canal zone by the specially skilled staff, of whom Colonel W. C. Gorgas is the distinguished chief, that relapsing fever has never made any headway, though repeatedly imported into that region from the neighbouring republic of Colombia, where, apparently, little or nothing is done to interfere with the spread of the malady, or to prevent its exportation to adjoining countries.

## PAROXYSMAL ŒDEMA OF THE LUNGS.

ACUTE œdema of the lungs is usually regarded as a rare and almost invariably fatal affection, and little attention is devoted to it in text-books of medicine. In a paper published in the June issue of the *Bristol Medico-Chirurgical Journal* Mr. C. E. S. Flemming contests both its rarity and its immediate fatality, giving an account of four cases which he has encountered. The striking feature of these was the recurrent nature of the condition, the attacks lasting altogether over a period of weeks or even years in one instance. The onset is usually heralded by irritation and dryness in the throat, with anxiety or vague fear of some impending danger. The patient cannot lie down, his breathing becomes rapid and oppressed, and there is pallor and often cyanosis. The cough increases, with expectoration of a frothy coagulable fluid which may contain blood. Auscultation reveals the presence of râles all over the chest, and the pulse is small and frequent. In about half an hour the symptoms diminish in intensity, and the exhausted patient may fall asleep. For the next day or two the moist sounds in the chest persist, but then disappear, leaving no signs of trouble until a fresh attack supervenes. This may take place in one or two weeks, or not for some months. The onset is most often at night, and no definite exciting cause can be ascertained. Of the author's four cases, two were in men and two in women, and the ages varied from 54 to 73 years at the time of death. The youngest patient was a woman of alcoholic habits, with a trace of albumin in her urine. She died in her third attack about six weeks after the first occurrence of this form of œdema. A second female patient who was the subject of mitral incompetence had many attacks at intervals of a few weeks, and finally committed suicide in a fit of depression. A man, aged 68, died in his second attack, while the fourth patient, a man of 70 when first seen, who showed signs of arteriosclerosis, lived for over two years, suffering at intervals from attacks of pulmonary œdema. Mr. Flemming notes the resemblance of these to cardiac asthma, but the frothy albuminous sputum is very different from that seen in asthmatic seizures. He believes that the explanation of the symptoms lies in the failure of the left ventricle, owing to which the pulmonary vessels become engorged with blood. The pallor, cold skin, small pulse, and sense of impending death all point to cardiac failure, while Welsh produced a similar condition in the rabbit by squeezing the left ventricle and paralysing its action. The cause of the sudden failure is not clear, but accumulation of some toxin in the blood is conceivable. In treatment nitrite of amyl was disappointing. Hot fomentation to the chest and inhalation of oxygen proved of some benefit, but the most effective remedy was a hypodermic injection of morphine with atropine, which produced immediate relief in one instance. It should be tried in all such cases.

## PHYSIOLOGICAL ACTIVITY IN THE TROPICS.

AN inquiry into one subject often leads to the discovery that many of the data collected, if collated to that end, will throw light on other subjects, and scientific research is fortunate when the intrinsic value of evidence collected for one object is recognised before the evidence is lost sight of. A good example of this situation will be found in a paper by Major Weston P. Chamberlain,[1] in which are recorded observations made on 1000 healthy soldiers stationed in the Philippines during 1909, 1910, and 1911, with the object of determining whether the complexion type of white men, or the use of clothing obstructive to actinic rays, exercises any influence on the ability of the individuals to endure tropical service. Both these questions were answered in the negative, as was noticed in THE LANCET at the time,[2] but the data have been re-examined by Major Chamberlain in reference to the light thrown by them on the relative importance of the climatic factor and the tropical disease factor in the difficulties attending colonisation of the tropics by whites. The observations were made at 13 different points in the Archipelago, ranging from 15° to 6° N., mostly at the sea level, but one was inland at an altitude of 600 feet. The observations affect the body temperature, pulse- and respiration-rates, blood pressure, influence of residence on body weight and on the blood and urine, influence of exercise, effects of the climate on the nervous system, and the action of the digestive system in the Philippines. The results of the observations seem to show that there is no appreciable variation for season, or for complexion type (fair or dark) in respect of temperature, which averages 98·7° F. The average pulse-rate is 77·3, the average respiration 19·3, the average blood pressure with an average age of 25·3 years, and using a five-inch armlet (Cook's modification of Riva-Rocci's apparatus) was 115 to 118 mm. mercury, the average loss of weight was 1·34 lb. per cent. in a year, irrespective of the size of the subject. Apart from parasitic diseases in healthy soldiers there is no definite anæmia produced by any variation in any of the particulars of environment. The average specific gravity of urine at the beginning of observations was 1019·9, 5 men had albumin, and 10 showed casts; at the end the average specific gravity was 1019·7, while 6 had albumin and 13 showed casts. The effect of exercise was only what would be expected in warm weather—viz., acceleration of pulse and respiration, slight increase of temperature, and a considerable rise in blood pressure. As regards the effects on the nervous system, mental and nervous diseases, which were very prevalent during the early years of occupation, the author believes to have been due to nostalgia and tedium, with resulting alcoholic and venereal excesses; for under the improved conditions prevailing for some years prior to the observations the numbers reported as sick for mental and nervous diseases, and the deaths from suicide, have not materially differed from those obtaining among troops stationed in the United States. The author's observations do not support the theory that the diet for the tropics should

[1] Some Features of the Physiologic Activity of Americans in the Philippines. By Weston P. Chamberlain, M.D., Major, Medical Corps, U.S. Army. The American Journal of Tropical Diseases and Preventive Medicine, official organ of the American Society of Tropical Medicine. Edited by Creighton Wellmann, M.D. Vol. I., No. 1. July, 1913. New Orleans.

[2] THE LANCET, May 11th, 1912, p. 1287.

differ materially from that for the temperate zones. As a result of these observations Major Chamberlain concludes that there is room for doubt whether light or actinic rays are factors in tropical morbidity or mortality. He found that dark subjects possessed no advantage over fair. The injurious effects sometimes attributed to light, he says, can be produced by heat and humidity in the absence of light, and to these factors he attributes such influence as the Philippine climate exerts on the white man. While the white skin absorbs heat less readily than the brown or black the latter has more sweat glands and radiates heat more freely. Suitable clothing, light in colour, a single layer sufficing to protect from the ultra violet rays, will protect the white man from the effects of heat and humidity. As to whether under improved sanitary conditions it will be possible for the white race to colonise permanently in the tropics Major Chamberlain points to Hawaii, and particularly to Barbados—where there are many men and women of pure English stock who have never been to a temperate climate yet are physically and mentally as well equipped as Europeans. These examples, with the successes so far in the Philippines, Cuba, Panama, and elsewhere, raise the hope that the complete conquest of certain parts of the tropics by the white race is not beyond the possibility of realisation. These later successes, however, are hardly yet, it seems to us, of sufficient duration to be of much value. The deterioration of Caucasian stock in the tropics, when it has occurred, has surely been rather a progressive condition than a fulminant one.

## CHOLECYSTITIS AND CHOLELITHIASIS IN PREGNANCY.

THOUGH it is generally recognised that cholecystitis and cholelithiasis, like appendicitis, may complicate pregnancy and the puerperium, little is said on the subject in the text-books. However, an American writer, De Lee, says, in his recent "Principles and Practice of Obstetrics": "It seems that pregnancy is a factor in the development of gall-stones, and attacks of biliary colic are not rare in the gravida. These seldom occur before the fifth month. Labour may cause pain in the full gall-bladder." In *Surgery, Obstetrics, and Gynecology* for July, 1910, Peterson published an exhaustive paper on the subject. He reported a case of obstructive cholelithiasis in a multipara six months pregnant which proved fatal from post-operative hæmorrhage. He collected from literature 24 cases of gall-stones complicating pregnancy and 10 complicating the puerperium. In the *Boston Medical and Surgical Journal* of May 8th, 1913, Dr. R. M. Green has reported the following cases. A woman, aged 22, had been married three years, during which time she had one miscarriage and one labour at term. In August, 1911, she again became pregnant. On Nov. 4th a slight bloody discharge from the vagina began and continued till the 14th, when profuse bleeding and expulsion of a three-months fœtus occurred. When seen on the morning of Nov. 15th she was still bleeding but was not exsanguine. The pulse was 108 and the temperature 100° F. The placenta was protruding from the os. Under ether the cervix was dilated and a large amount of placental tissue removed. After the operation the temperature did not fall and she complained of general abdominal pain. An intra-uterine douch was given, and the temperature was normal on the 18th; but on the 19th there were acute pain in the right upper quadrant of the abdomen, considerable tenderness, and muscular spasm and nausea. On the 20th these symptoms continued and the temperature rose to 100°. She was slightly jaundiced and there was a trace of bile in the urine. On the 21st the pain and fever had subsided, but the tenderness and spasm continued, and the leucocytes numbered 17,600. On interrogation she acknowledged that she had had similar attacks of pain before but less severe. Convalescence proceeded till the 26th, when a second attack of pain occurred, and a third, but less severe, occurred on the 30th. Each lasted about three days. The physical signs in each attack were the same. Intercurrent cholecystitis was diagnosed. On Dec. 7th a high right rectus incision was made. The common bile-duct was palpated but no stone was felt. The gall-bladder was somewhat thickened and surrounded by a few slight adhesions. It was opened, and an ounce of thick, dark bile escaped. This yielded a pure culture of staphylococci. The gall-bladder was stitched to the peritoneum at the upper angle of the wound and drained. Recovery was uninterrupted. In the second case the patient was a negress, aged 38. She had been married seven years, during which two normal labours occurred. Menstruation ceased on June 20th, 1911. On Nov. 14th a slight bloody discharge began and became profuse on the 17th, when a four months fœtus was expelled. Some dark bloody discharge continued. When first seen on the 29th the temperature was 100°. The vaginal fornices were tender, but no masses were felt. Under ether the os was dilated, and some tissue was removed with the curette, which the pathologist pronounced inflammatory. The temperature remained at 100°, which was attributed to bronchitis which had developed. She complained of headache and had profuse diarrhœa. There was moderate tympanites. On Dec. 25th a severe attack of pain in the right upper quadrant occurred requiring administration of morphine. There were marked tenderness and spasm in the region of the gall-bladder. The pain subsided, but on Dec. 7th the temperature rose to 101·8° and the conjunctiva became jaundiced. On the 10th the pain recurred, and a rounded tense mass was felt projecting below the right costal border. Acute cholecystitis, probably associated with obstruction from a calculus, was diagnosed. On operation the gall-bladder was found tense and purplish. On opening it two ounces of colourless cloudy tenacious mucus escaped. On culture this yielded a pure growth of the colon bacillus. In the opening of the cystic duct was a greyish-yellow calculus. The operation was completed as in the previous case and recovery ensued. Dr. Green draws the following conclusions: (1) There seems to be a definite causal association of cholecystitis and cholelithiasis with pregnancy; (2) symptoms due to either of these conditions may occur during pregnancy of the puerperium; (3) gall-bladder disease is not a cause of miscarriage, but the latter may induce the development of active symptoms; and (4) surgical treatment is indicated.

## CEREBRAL ABSCESS SECONDARY TO AMŒBIC ABSCESS OF THE LIVER.

IN *St. Bartholomew's Hospital Journal* for July Professor Llewellyn P. Phillips, of Cairo, has reported a case of a rare complication of amœbic abscess of the liver—cerebral abscess. In December, 1912, he saw a man who had returned from England suffering from severe headache. He had dysentery in Egypt during the summer and went home on leave. A hepatic abscess formed while he was in England, and was opened early in September. His general health improved, and although he had not quite regained his strength he returned to Egypt. At Marseilles he felt very ill and rested a couple of days before embarking. On board the steamer he suffered from intense headache. On arrival at Cairo he immediately went to hospital. He was suffering from intense occipital headache. In the evening the temperature was 101° F. and the pulse 60. The pain was so great that morphine was given. Next morning Kernig's sign and a *tâche cérébrale* were present. He could not see well, but the pain prevented him from giving a clear

account. That night the temperature fell to 97°. On the following day he was in the same condition. Lumbar puncture yielded a little straw-coloured fluid, which proved sterile. In the evening he became delirious and next morning he died, the illness having lasted 11 or 12 days from the onset of cerebral symptoms. The necropsy showed a small cavity in the left occipital lobe containing about two drachms of semi-purulent thick fluid. The straw-coloured cerebro-spinal fluid was an unexpected finding difficult to explain. In the *Archives Provinciales de Chirurgie* for January, 1912, Dr. Legrand, of Alexandria, has published a paper entitled "Les Abces Dysentériques du Cerveau (Amibiase Encephalique)." He refers to 45 cases, in 43 of which the cerebral abscess accompanied or followed an abscess of the liver; in the remaining 2 cases there was no hepatic abscess, but in 1 amœbæ were found in the brain. He refers to 9 cases in which amœbæ have been demonstrated in cerebral abscess. To ordinary bacteriological methods these abscesses are sterile, but Dr. Le Grand has demonstrated by anaerobic methods that a micrococcus or streptococcus may occasionally grow. He thinks that symbiosis of the amœbæ with one of these organisms causes the abscess. The amœbæ are found in the wall of the cavity. Professor Phillips points out that under ordinary circumstances the liver acts as a filter for the portal circulation and arrests the amœbæ which may have penetrated into the radicles of the portal vein. Some may pass into the vena cava and infect the lung. Just as occasionally hepatitis may be engendered without preceding dysentery, so can occasionally the lung, or very rarely the brain, be infected, while the liver escapes. In 3 of the cases of cerebral abscess an operation was performed, but all were fatal.

## THE TREATMENT OF EMPYEMA IN INFANTS AND YOUNG CHILDREN.

IN the June number of *American Medicine* there is a very instructive article by Professor L. Emmett Holt on the Comparative Value of the Various Methods of Treating Empyema in Babies, based on a study of 154 cases in patients up to the age of 3 years. Of these two-thirds were males, and the pneumococcus was present in pure culture in exactly half. The general mortality amounted to 56 per cent.; it was highest (79 per cent.) in the purely streptococcal cases, 24 in number. The death-rate decreased with advancing age. Of the children attacked during the first year of life 73 per cent. died; during the second year, 58 per cent.; and during the third year, 16 per cent. only. In analysing the causes of death Professor Holt comes to the conclusion that apart from cases of generalised infection with fatal complications, such as meningitis and pericarditis, the factor chiefly responsible for the high mortality is imperfect expansion of the lung after operation. "For about a week after operation the children frequently do well; then the temperature goes higher and shows wider fluctuations, though the discharge is free." This is followed by progressive exhaustion, the child dying three or four weeks after operation. Analysis of the results obtained by various methods of treatment shows that children over 2 years of age do well under any plan which includes incision and drainage, while younger children do best if treated by "siphon drainage." The technique employed at the Babies' Hospital, New York, where Professor Holt's patients have been treated, consists of a modification of the German plan introduced by Bülau. After exploratory puncture the needle is left *in situ* as a guide; a puncture-incision is made with a small scalpel and a rubber catheter of a size to fit tightly into this opening is introduced about 1 inch of its length. This is kept in position by means of a carefully arranged tape. The distal end of the catheter tube is clamped with artery forceps till all the connexions are completed. The tube, which is 8 to 10 inches long, is connected by a piece of glass tubing with a long rubber tube affixed to an ordinary wash-bottle standing on the floor beneath the child's crib. The bottle is plugged with a rubber stopper, through which a glass tube passes to a level below that of the normal saline solution which the bottle contains. The whole apparatus is, of course, carefully sterilised. Continuous drainage without the formation of a pneumothrax is thus secured. The saline in the bottle must be changed as often as necessary, the tube being meanwhile clamped; and blocking of the tube must be prevented by manœuvres which Professor Holt describes. After a few days the tube is apt to become loose in the incision; it may then be removed, the chest being left to drain into dressings in the ordinary way. Two advantages claimed by Professor Holt for this plan are that it prevents collapse of the lung and that it obviates the distress caused by daily dressing. He regards resection of rib as unnecessary except in chronic cases, simple incision securing all the drainage that is required. The imperfect results that follow operations for empyema n infants are particularly disappointing because in older children they are so remarkably successful; the siphon method, backed by Professor Holt's influential advocacy, should therefore commend itself to practitioners as worthy of trial.

## THE NUMBER OF MEDICAL STUDENTS IN GERMANY.

ONE of the consequences of the introduction of National Insurance in Germany has been the growing number of students of medicine, and the sick clubs do their utmost to promote the recruiting to the ranks of the medical profession, as by this means they hope to be able to keep the rates of remuneration as low as possible by fostering competition in the struggle for life amongst the doctors. These steadily growing numbers are now becoming a serious menace to the future of the profession, and the situation is viewed with some apprehension. During the past winter semster there were in all 13,380 students of medicine inscribed on the rolls of the German universities, against only 5926 in the years 1904–05. The number of practitioners obtaining their qualification at present increases at the rate of 150 yearly, so that from a total of 1650 obtaining their qualification in 1913–14 this number will increase to 2500 in 1919–20. At present there are 33,527 qualified medical practitioners in Germany, and assuming that the annual loss to the profession through death or retirement averages 650 in the years 1919–20, there will be no less than 44,227 doctors endeavouring to find a livelihood out of their professional work. It is pointed out that such a state of affairs must lead to an economic catastrophe, as at least one-third of these practitioners will be unable to make a living.

ON July 30th the Home Secretary made an order, which is now in force, extending the provisions of Section 8 of the Workmen's Compensation Act, 1906, to writer's cramp, and consolidating the previous Orders of June 22nd, 1907, and Dec. 2nd, 1908, with an alteration in regard to the definition of nystagmus, which is now scheduled as "the disease known as miner's nystagmus, whether occurring in miners or others, and whether the symptom of oscillation of the eyeball be present or not." The Order provides that a person suffering from writer's cramp shall not be entitled to compensation for a longer period than 12 months.

THE President of the Board of Education has appointed a Departmental Committee to inquire as to the steps by which

effect shall be given to the scheme of the Report of the Royal Commission on University Education in London. The bodies and persons concerned will be consulted and the report is to recommend the specific arrangements and provisions which may be immediately adopted as the basis of legislation. The Committee is as follows: Sir George H. Murray (chairman), Sir L. Amherst Selby-Bigge, Sir John Rose Bradford, Sir William S. MacCormick, Dr. George Franklin, Professor Arthur Keith, Mr. John Kemp (barrister-at-law), and Mrs. Henry Sidgwick, with Mr. H. F. Heath, C.B., as secretary.

## A REPORT TO THE LOCAL GOVERNMENT BOARD ON VENEREAL DISEASES.[1]

A REPORT on this subject by Dr. R. W. Johnstone, one of the medical inspectors of the Local Government Board, was issued as a Parliamentary paper at the end of last week. It deals with a variety of matters which bear upon the question of the prevalence and preventability of venereal diseases, giving special consideration to the adequacy and general character of the arrangements for their institutional treatment in England and Wales.

### *General Survey.*

On the subject generally, Dr. Johnstone begins by pointing out that under present-day conditions the prevention and cure of venereal disease among the civil population of this country is a matter which depends primarily, often wholly, on the action of the individual. It is for him to avoid these diseases or to guard against them as best he may, and if attacked by them to seek medical treatment in his own way and in his own time, while, as he chooses, he may regard or disregard his opportunities of infecting others. For reasons not far to seek, organised effort to diminish the prevalence of venereal diseases has not hitherto come within the purview of the public authorities concerned with the prevention and treatment of disease. Nor would its desirability be accepted as indisputable, in the way in which control exercised by such authorities over other endemic diseases, like infectious fevers, has become accepted. Accordingly in the report is incorporated some of the essential matters in the history, prevalence, treatment, and method of spread of the disease in question in order that the nature of the problem, as a subject for public action, may be viewed in proper perspective.

After a brief outline of the history of syphilis the report discusses the data available to show its prevalence in this country, and concludes that it is impossible to make any estimate which approaches accuracy. It is even difficult to form a certain opinion as to whether the disease is becoming more common than formerly or not. The mortality figures of the Registrar-General relating to deaths specifically referred to "syphilis" between 1875 and 1910 show a gradual and fairly steady decrease (from 89 deaths per 1,000,000 in 1875, to 46 in 1910), but it is doubtful whether these figures give any reliable indication of the real prevalence of the disease, and the suggestion of a steady decrease in prevalence does not accord with the opinions which Dr. Johnstone collected from numerous specialists and general practitioners actually dealing with syphilis on a large scale for many years, both in London and the provinces. Most of those consulted were of opinion that in the course of their work they saw as large or a larger proportion of syphilis now than 20 years ago, although they were agreed that the grosser and more obvious lesions were less frequently met with than formerly, more especially in the primary and secondary stages of the disease. Dr. Johnstone adds that if these practitioners are not deceived syphilis in the early stages has been gradually becoming more easily passed over or concealed, with the result that the history of patients in the advanced stages is rendered more obscure.

It is also pointed out that the Registrar-General's figures, so far as they are available, give no indication that there has been a corresponding fall in the death-rates from diseases known to be generally caused by syphilis; in particular, locomotor ataxy, general paralysis of the insane, diseases of the arteries (especially those leading to aneurysm), valvular disease of the heart, and insanity. Statistics obtainable from army records are also discussed, including those which show a most remarkable diminution in the number of recruits rejected on account of syphilis, which has fallen from 158 per 10,000 in 1870 to only 19 per 10,000 in 1911. Unfortunately, there are many important considerations which prevent these figures from being accepted at their face value as evidence of a rapid fall of syphilis among the population generally. Other considerations make it equally difficult to draw conclusions from the figures as to admission or readmissions of soldiers to hospitals on account of venereal diseases.

Dr. Johnstone considers that inferences drawn from prevalence of syphilis in other countries are, on the whole, unlikely to lead to any accurate estimate of its prevalence at home. Notification figures for syphilis are available in the case of Copenhagen, and in the year 1911 show 2696 cases (including 87 congenital cases) amongst a population of 465,000. These, however, cannot be relied upon, as in the absence of names the same cases are frequently notified more than once. Fournier's estimate of the proportion of syphilitics in Paris at 15 per cent. is referred to, and also his opinion that there is relatively less syphilis in London. If it is assumed that 12 per cent. of the population in London has been infected, the total number of syphilitics would be well over 500,000. There is a general belief that this disease is more prevalent in London and in the larger towns than elsewhere, but data are not available which would afford means for any definite conclusion.

After observations on the significance of syphilis from the public health point of view, and the recognition of syphilis with special reference to the Wassermann and Noguchi tests, the report considers the infective ability of syphilis at different stages and the method of its spread. No doubt a great deal of syphilis is spread by women known to be prostitutes. The foreign experience quoted, however, is to the effect that the acknowledged prostitute has to be considered a less dangerous class than the "clandestine" or occasional prostitute. The distinction between these two classes, which is made essentially on police grounds, hardly obtains in England, but Dr. Johnstone considers that when due allowances are made a similar conclusion must be drawn from this country.

The report states that

> Much syphilis is spread by males who have become infected and who, through ignorance or occasionally through recklessness, infect other persons. This is largely due to the desire for concealment which leads people to avoid their doctors and to resort to quacks and chemists in the early and highly infective stage of the disease. I was informed by medical men practising in the different towns I visited that they were rarely consulted until the patient had spent some weeks in the hands of a herbalist, or chemist, or in trying some advertised cure. During this interval the absence of proper treatment and of the warning which every medical man would consider it his duty to give has led to many disasters. Probably such recourse to quacks has always been common, and it is not unlikely that early recourse to efficient treatment is now more general than formerly.

The observations made on the treatment of syphilis principally relate to recent methods, including the results of salvarsan treatment and the action of salvarsan in removing infective ability, the experience of the Military Hospital, Rochester Row, as given by Major T. W. Gibbard, R.A.M.C., and Major L. W. Harrison, R.A.M.C., being particularly referred to.

### *The Institutional Treatment of Venereal Diseases.*

Under this heading Dr. Johnstone deals with (1) the general hospitals, which in London are always teaching institutions, and in the provinces may or may not receive students; (2) the workhouse and the workhouse infirmary; and (3) the Lock and special hospitals for venereal disease.

In regard to the general hospitals, attention is drawn to the paucity of the indoor accommodation provided for venereal diseases in the defective stages.

> As a general rule no beds were reserved for such cases, and I was given to understand that the hospital committee did not encourage their reception as in-patients. In some cases this attitude apparently had the approval of the medical staff. Even at teaching hospitals, in spite of the urgent need for familiarising students with the diagnosis and treatment of venereal diseases in their earliest stages, beds were rarely provided for such cases. In several hospitals I was informed that it would be contrary to the statutes to receive venereal cases. In

[1] Report to the Local Government Board on Venereal Disease. By Dr. R. W. Johnstone. With an introduction by the Medical Officer of the Board. Cd. 7029. Price 2½d. London: Wyman and Sons, Fetter-lane; Edinburgh: H.M. Stationery Office; Dublin: E. Ponsonby; Foreign and Colonial Agent: T. Fisher Unwin, London.

others I heard that it was unreasonable to expect subscribers to spend their money on rescuing persons from the consequences of their sins, and in one hospital at least it was hinted that the whole subject was unsavoury, and that they did not wish to be connected with it even as regards out-patients. In all these hospitals advanced cases of syphilitic disease and late complications of gonorrhœa were apparently freely admitted. It would appear, then, that many hospital beds now occupied by such cases would be set free by more efficient treatment of the early cases, with the effect of preventing the occurrence of the late ones.

Venereal cases were accepted as out-patients in practically all the general hospitals visited, whether in London or in the provinces, though in some instances Dr. Johnstone found evidence of discriminations against women of loose character being made, on what were considered to be moral grounds. About two-thirds of the provincial general hospitals visited had admitted a few cases for salvarsan treatment, but less than one-third of them were prepared to undertake the Wassermann test, though a few sent out occasional specimens of blood to be tested at outside laboratories.

As regards wards in which patients could be kept for a few days before being out-patients, a matter which has now become of special importance in connexion with treatment by salvarsan, they are particularly defective, still more so in respect of beds available for the continuous indoor treatment of appropriate cases. Nor are they at present organised as regards out-patients in such a way as to give the best available facilities for early treatment of those who can be treated as out-patients.

In the case of Poor-law institutions the practice is to provide special wards for infective venereal cases, sometimes at the infirmary, but more often at the workhouses, while cases of tertiary ulcer and other late non-infectious syphilitic cases are accommodated in the general wards. The venereal wards in the infirmaries are, as a rule, of modern construction, well kept, and well administered, and the venereal patients with occasional restrictions are treated quite as well as the other patients, and are allowed to take exercise with them and to receive visitors on certain days. But it would appear that with few exceptions modern methods of diagnosis and treatment by salvarsan and similar remedies are not undertaken; the medical staffs of these institutions are as a rule too limited in number to undertake fresh and onerous duties, and Dr. Johnstone advises that greater facilities should be given by boards of guardians to their medical officers in the matter.

In the case of workhouses it seems to be a rule to choose the worst wards in the house for the accommodation of venereal diseases. Some of those visited were damp and some were dirty. In others the sanitary arrangements were out of date and out of repair. In about a third of the workhouses visited itch cases and what are known as "dirty cases" were accommodated either in the Lock wards or in close proximity to them. The provision of space for exercising in the open air, an important matter in the treatment of syphilis by mercury, was sometimes very defective, and the report draws attention to the fact that venereal patients are often unprovided with any occupation although they are able bodied. In nine workhouses the males were not allowed even to leave their ward. In the institutions described it is not surprising to read that considerable difficulty is experienced in retaining venereal patients for treatment until the most infective stage is passed. On the other hand, in the opinion of the Poor-law officials, any proposals for compulsory powers of detention would be defeated, as venereal patients would, in that case, cease to come for treatment.

The work of the few special hospitals for venereal diseases in this country is also discussed. In referring to the treatment of syphilis among people of the middle and upper classes, Dr. Johnstone suggests that those with smaller means, who would not go to charitable or Poor-law institutions, would no doubt sometimes be benefited if they could receive efficient modern treatment in homes or institutions analogous to the "pay wards" of some of the London general hospitals. For obvious reasons no open demand has been made for such accommodation, and very little is available.

### *The Control of Venereal Disease.*

No encouragement is given in the report to administrative measures for the control of prostitution on the lines of the Contagious Diseases Acts, which were introduced in connexion with military stations in 1864 and finally abolished in 1886. The diminution in the prevalence of venereal disease is going to be looked for in other directions.

Medical science can do much to shorten the infective stage of syphilis, diminish its intensity, or effect a cure, and recent advances have put the physician in a position in which, given knowledge, skill, and opportunity, he can do these things with far greater certainty and in far less time than was possible until recently. If the syphilitic can and will obtain appropriate treatment at the right time, there is, therefore, good reason to believe that the spread of the disease among the population could be rapidly arrested.

Dr. Johnstone urges, however, that if facilities for modern treatment are to be obtained, either under present conditions in which the individual is subject to no restraint or official supervision in the matter of the treatment he obtains, or by the introduction of methods of control more or less analogous to those applied to infectious diseases, certain traditional views of the subject among the public must be revised. He refers particularly to the popular conception of venereal diseases as the just retribution of sin. This attitude, which prevails amongst a large section of the public, prevents the charitable from subscribing towards the proper cure and treatment of venereal diseases, it influences our general hospitals through their lay committees against the provision of accommodation for these diseases, and it emphasises the stigma and disgrace attached to the inmates of lock hospitals and the lock wards in our Poor-law institutions. While it acts as a great deterrent to the provisions of proper treatment, it operates still more seriously by leading to concealment of the disease, and by preventing sufferers from seeking the aid and advice which is essential for their cure and for the prevention of the spread of the disease.

In regard to treatment, the report points out that many medical men in general practice, as well as specialist consultants, are, of course, already fully in a position to undertake treatment involving the judicious use of salvarsan and the application of the results of modern laboratory tests; and as time goes on more men will no doubt take steps to become familiar with the procedure which should be followed to obtain the best results in this way. But the methods concerned are not altogether simple; they require time, and a certain amount of cost must be incurred, and in many cases it is unwise to apply them to patients who are up and about. Hence for a large section of the population it would be practically necessary to resort to institutions where they can, if necessary, be received as in-patients, if only for a day or two, besides obtaining systematic attention as out-patients.

After referring to the serious practical difficulties in the way of successfully supplying this need by the provision of special institutions and clinics for venereal diseases alone, the report emphasises the great advantage which would accrue if the necessary accommodation could be provided in special wards in our general hospitals throughout the country, together with special arrangements for venereal out-patients. In these institutions provision for carrying out the most modern treatment under the best conditions could easily be made, and adequate medical assistance and control would be available. Free tests in aid of diagnosis, such as the Wassermann and Noguchi tests, gonococcus searches, spirochæte searches, and the preparation of vaccines would also have to be provided; much of this work could be carried out in existing laboratories. Every inducement would have to be offered to sufferers from venereal diseases to present themselves for treatment as early as possible. All humiliating discrimination between venereal and other patients would have to be avoided; the patients must be treated as sick persons seeking cure, and not as delinquents, and their privacy must be respected. Every venereal patient rendered non-infective by proper treatment in the early stage of the disease means not only the prospect of his ultimate cure, but the prevention of the spread of the disease to others. Compulsory detention for treatment would, in Dr. Johnstone's opinion, defeat its own end.

A development of general hospitals, not only in London but also in the chief provincial centres, for the treatment of venereal diseases would receive support from public authorities in such matters as the provision of laboratory assistance for tests and for making bacterial searches, and the diffusion of information as to the necessity of early and adequate treatment, with the names of the institutions at which it can be obtained; financial help would also come from the sanitary authorities to the institution serving their districts. The matter has also an important concern for Local Insurance Committees, which should be able in various practical ways to support institutional treatment and to encourage early application for it.

As regards the question of making venereal diseases notifiable, Dr. Johnstone states that it does not seem that

the time is yet ripe. The stigma of suffering from venereal disease is so great, and the desire for concealment, with its consequent resort to quacks and self-treatment so marked, that until a more reasonable attitude towards the whole subject has penetrated to the popular mind, notification would be likely to increase the number of concealments. Notification without names or addresses, as in Denmark, does not appear to have any great advantage even in the matter of providing statistics. He considers that if full notification were adopted in this country later on, it would have to be accompanied by legislation to prohibit the treatment of venereal diseases by unqualified persons, as has been done in Australia and elsewhere.

Although the report deals with "venereal diseases," it is essentially concerned with syphilis, and the references which it contains to gonorrhœa are somewhat meagre. The administrative problems involved in the repression of gonorrhœa are in several respects special, and call for further study.

The report is prefaced by an introductory statement by the medical officer of the Local Government Board, Dr. A. Newsholme, in which attention is drawn to the great importance of the subject to public health, and the nature of the principal conclusions of the report.

## THE NATIONAL ASSOCIATION FOR THE PREVENTION OF INFANT MORTALITY AND FOR THE WELFARE OF INFANCY.

THE National Association for the Prevention of Infant Mortality held a Conference on August 4th and 5th at the Caxton Hall, Westminster, under the presidency of the Right Hon. JOHN BURNS, M.P. There was a large attendance, among which were 23 official delegates from foreign countries, the colonies, and the overseas dominions, besides representatives of the public health and Poor-law authorities.

In his presidential address Mr. BURNS dwelt on the need for adjusting the health of the people with the conditions developing under the growth of trade and the increase of urbanization. These were disturbing factors of the quiet, rest, and fallow conditions so necessary for a happy childhood. It was not an accident that the clergyman and the gardener had relatively the longest life. He referred to the influence of working mothers on infant mortality, illustrating it by a comparison of two similar communities, Burnley and Battersea, where the infant death-rates were respectively 171 and 83 per 1000. This he attributed to the fact that in Burnley a large percentage of the mothers were at work, while in Battersea they were at home. For at least four months before the baby was born, and for longer afterwards, mothers should be mothers and not machines. Doctors' babies died at the rate of only 40 per 1000. The rate in the upper and middle classes was 77, among artisans 100 to 130, among miners 160, unskilled labourers 150 to 250, and agricultural labourers, notwithstanding low wages, only 97 per 1000. In the seven years since the Conference began the saving of human lives compared with the previous seven years was 545,000, and of infant lives 200,000. Mr. Burns deplored the number of childless women of the better classes who were wasting their motherly devotion over pet dogs and so forth, when those who knew the existing conditions could provide them with human substitutes for their care. He made a reference to cancer and to sexual diseases, and spoke of a report in preparation by the Local Government Board on the latter.

The sections were two, Administrative and Medical. At the morning session of the Medical Section Mr. PEASE, President of the Board of Education, who presided, said that the Board realised that the physical condition was an essential preliminary consideration to education. Referring to the reduction of infant mortality in the last few years, he attributed it to two causes: slight improvement in the physical condition of childbearing mothers and better infant care and management. The Board was doing its best to disseminate information through the schools, and by encouraging schools for mothers, and the instruction of girls in the care of infants. He praised the efforts of voluntary workers.

Papers were read in the morning on subjects relating to Education and Infant Hygiene by Dr. L. E. La Fetra (New York), Dr. C. Paget Lapage (Manchester), Dr. F. Truby King (New Zealand), Dr. Caroline Hedger (Chicago), Dr. Christopher Addison, M.P. (London), and Miss Gregory.

At the afternoon session, under the presidency of Sir GEORGE NEWMAN, M.D., Milk Problems were discussed by Dr. Henry L. Coit (New Jersey, U.S.A.), Dr. Eric Pritchard (London), Dr. A. E. Naish (Sheffield), Dr. G. R. Pisek (University of Vermont, U.S.A.), Dr. Fritz Talbot (Boston, U.S.A.), and Frederick Langmead (London). On Tuesday in this section Dr. CHARLES A. HODGETTS (Canada) was chairman, and papers were read on subjects relating to Antenatal Hygiene by Dr. J. W. Ballantyne (Edinburgh), Dr. J. M. Munro Kerr (Glasgow), Dr. F. W. Mott (London), Dr. P. Van Ingen (New York), Mrs. Fowler (Birmingham), Dr. J. L. Huntington (Boston), and Dr. A. K. Chalmers (Glasgow).

Dr. Chalmers dealt with the working of maternity benefit under the Insurance Act. Since the Act came into force there had been a great decrease in notification of births by the staffs of maternity hospitals, and a corresponding increase in notification by private practitioners and midwives. The working of the maternity benefit had been satisfactory on the whole. In 56 cases no benefit had been received, though one of the parents was insured, and in 137 cases neither was insured, though inquiry showed that they should have been. Usually the money was paid direct to the husband, but in some cases where the woman applied showing that the husband would abuse the benefit payment was made to her. One result of the Act had been a rise in midwives' fees. He discussed the abuse of benefit money.

The Administrative Section was presided over on Monday by Dr. ARTHUR NEWSHOLME, C.B. In the morning there were papers relating to the Responsibilities of Central and Local Authorities in the Matter of Infant and Child Hygiene, by Mr. F. E. Fremantle (Hertfordshire), Dr. Charles A. Hodgetts (Canada), Professor Richard Caton (Liverpool University), Dr. H. J. Gerstenberger (Cleveland, U.S.A.). A paper by Miss Julia C. Lathrop on the Federal Children's Bureau of the United States was taken as read. In the afternoon papers on various administrative subjects were read by Mrs. Kitson Clark (Leeds), Dr. Helen Macmurchy (Toronto), the Hon A. A. Kirkpatrick (South Australia), Dr. H. L. K. Shaw (Albany), Dr. S. G. Moore (Huddersfield), and Dr. A. Jasper Anderson (Cape Town).

On Tuesday the Administrative Section was presided over by the Countess of ABERDEEN, who in her address referred to the Viceregal Milk Commission appointed a few years ago. The Commission, she said, had travelled all over Ireland, and taken evidence from Manchester, Liverpool, Birmingham, and Glasgow, and was about to issue a unanimous report. The Commission would dwell on the importance of milk depôts. The question in the towns was shown to centre largely round organisation for bringing the consumer and the producer together. The importance of winter dairying, the keeping of records, improvement in the milk yield of cows, and the use of goats would be referred to. The second part would deal with the preservation of milk from contamination.

Papers relating to the Administrative Control of the Milk Supply were read by Professor J. M. Beattie (University of Liverpool), Assistant Surgeon-General John W. Kerr (U.S. Public Health Service), Dr. W. G. Savage (Somersetshire), Professor E. W. Hope (Liverpool), and Mr. J. W. Brittlebank (Liverpool).

In the afternoon of August 5th a joint meeting of the two sections took place, when resolutions were passed urging: That maternity benefit be made the property of the mother; the paying of adequate attention to good bodily health and development and fitness for maternity in young girls, as well as to education; the registration of still-births; greater completeness in medical certificates of death; better training for the midwife's certificate; a more important place in the medical curriculum for infant hygiene; an international conference to inquire into the causes, treatment, and prevention of venereal diseases; and the presentation to Parliament of a Milk Bill.

The next Conference will be held at Liverpool.

# THE LONDON COUNTY COUNCIL AND MEDICAL AFFAIRS.

### *Treatment of Tuberculosis.*

THE Public Health Committee of the London County Council has reported with reference to the instruction of the Council in February to prepare forthwith a scheme for dealing with tuberculosis throughout the country.[1] The committee noted a change of view on this subject on the part of the Local Government Board; the Board apparently no longer desired the Council to prepare a scheme dealing with dispensary provision, but desired the metropolitan boroughs to make arrangements, the Council to act merely as a critic. The committee had asked for a clear statement from the Board on this point. It would be realised how difficult it was to prepare a comprehensive scheme if the local authorities were dealing with the problem simultaneously from a local standpoint and without regard to the needs of London as a whole. Several borough schemes already prepared provided for the establishment of municipal dispensaries to the exclusion of existing provision, whereas it was manifestly desirable that regard should be had to existing available institutions.

The Council, at the request of the committee, expressed approval of the following principles in regard to provision for tuberculosis treatment:—

1. All possible use should be made of existing institutions.
2. Approval should not be given to any scheme which fails to provide for each dispensary being linked up with a hospital to which special cases shall be referred for consultation or treatment, residential or otherwise; and that the Local Government Board be so informed.

### *Regulation of Lying-in Homes.*

Notice has been given of the intention to promote legislation in the session of 1914 to obtain power to license lying-in homes in the county of London. The Midwives Act Committee stated in recommending this step that in administering the Midwives Acts it had been impressed with the necessity, both from the sanitary and from the moral point of view, for some measure of public control being exercised over lying-in homes. Over 100 houses and institutions at which pregnant women were received were known to exist in London, and the necessity for conferring on local authorities powers to regulate such places was recognised to some extent in the two Bills for the amendment of the Midwives Act, 1902, which were introduced in the House of Lords in the session of 1910. Moreover, representations had recently been made by delegates from various charitable societies and others that, as the result of the passing of the National Insurance Act, 1911, unmarried women who formerly obtained admittance to Poor-law institutions for their confinements, now in many cases received maternity benefit under the Act and entered lying-in homes, at which, in some instances, they were subjected to immoral influences.

### *School Medical Service: Reply to Criticisms by the Board of Education.*

Dealing with the criticisms of the school medical service in London contained in the letter of the Board of Education, as reported in THE LANCET of August 2nd, the Education Committee promises a report in due course as to the extension of the functions of the assistant medical officers suggested by the Board. As to the criticism that certain inspection work was undertaken by nurses instead of by doctors, the committee stated that the nurses must necessarily do some routine work in preparation for the visit of the doctor and in order that he might inspect the requisite number of children at each of his visits. The physical measurements carried out by the nurses in 1911 were in complete agreement with the standards arrived at in former years from measurements made by medical officers. Arrangements, however, were being made for the school doctors to take the physical measurements on all occasions of children suffering from malnutrition. The school doctors had been instructed to examine all cases of defective vision reported as a result of the preliminary examination by the nurse, and the standard of defect was to be made more stringent. The preliminary examination of children for hard-of-hearing classes was made by the school doctor, and some cases were further specially examined by the Council's otologist.

[1] THE LANCET, Feb. 15th, 1913, p. 476.

# VITAL STATISTICS.

### HEALTH OF ENGLISH TOWNS.

IN the 96 English and Welsh towns, 7589 births and 4125 deaths were registered during the week ended Saturday, August 9th. The annual rate of mortality in these towns, which had been 11·3, 11·0, and 11·6 per 1000 in the three preceding weeks, further rose to 12·0 per 1000 in the week under notice. During the first six weeks of the current quarter the mean annual death-rate in these towns averaged 11·4, against 10·8 per 1000 in London during the same period. Among the several towns the death-rate in the week under notice ranged from 4·5 in Wimbledon, 4·6 in Cambridge, 5·0 in Merthyr Tydfil, 5·1 in Willesden, and 5·8 in Oxford, to 18·4 in Walsall, 19·4 in Dewsbury, 19·5 in Wigan, 19·8 in Aberdare, and 21·2 in Birkenhead.

The 4125 deaths from all causes in the 96 towns were 172 in excess of the number in the previous week, and included 562 which were referred to the principal epidemic diseases, against numbers rising from 281 to 448 in the five preceding weeks. Of these 562 deaths, 391 resulted from infantile diarrhœal diseases, 67 from measles, 45 from whooping-cough, 25 from diphtheria, 21 from scarlet fever, and 13 from enteric fever, but not one from small-pox. The mean annual death-rate from these diseases in the week under notice was equal to 1·6, against 1·2 and 1·3 per 1000 in the two preceding weeks. The deaths of infants (under two years of age) attributed to diarrhœa and enteritis, which had been 149, 214, and 264 in the three preceding weeks, further rose to 391, and included 73 in London, 25 in Birkenhead, 24 in Liverpool, 24 in Manchester, 19 in Sheffield, 19 in Birmingham, 14 in Cardiff, and 13 in St. Helens. The deaths referred to measles, which had been 68, 77, and 77 in the three preceding weeks, declined to 67 in the week under review; 13 deaths occurred in London, 13 in Stoke-on-Trent, 5 in Liverpool, 4 in West Bromwich, and 4 in Manchester. The fatal cases of whooping-cough, which had been 62, 50, and 47 in the three preceding weeks, further fell to 45; of this number 9 were registered in London, 5 in Manchester, 3 in Liverpool, and 3 in Oldham. The deaths attributed to diphtheria, which had been 35, 31, and 36 in the three preceding weeks, declined to 25, and included 8 in London, 2 in Stoke-on-Trent, and 2 in Birmingham. The deaths referred to scarlet fever, which had been 20, 15, and 18 in the three preceding weeks, slightly rose to 21; 5 deaths were recorded in Birmingham, 4 in London, 2 in Bury, and 2 in Manchester. The fatal cases of enteric fever, which had declined from 14 to 6 in the four preceding weeks, rose to 13 and included 2 in London and 2 in South Shields.

The number of scarlet fever patients under treatment in the Metropolitan Asylums and the London Fever Hospitals, which had steadily increased from 1418 to 2125 in the preceding eight weeks, had further risen to 2131 on Saturday, August 9th; 244 new cases were admitted during the week, against 357, 346, and 258 in the three preceding weeks. These hospitals also contained on August 9th 887 cases of diphtheria, 236 of measles, 233 of whooping-cough, and 54 of enteric fever, but not one of small-pox. The 987 deaths in London were 99 in excess of the number in the previous week, and corresponded to an annual death-rate of 11·4 per 1000. The deaths referred to diseases of the respiratory system, which had been 115, 107, and 108 in the three preceding weeks, slightly rose to 115, and were 16 in excess of the number recorded in the corresponding week of last year.

Of the 4125 deaths from all causes in the 96 towns, 201 resulted from various forms of violence and 394 were the subject of coroners' inquests. The causes of 43, or 1·0 per cent., of the total deaths were not certified either by a registered medical practitioner or by a coroner after inquest. All the causes of death were duly certified in Sheffield, Leeds, Bristol, West Ham, Bradford, Newcastle-on-Tyne, Nottingham, and in 64 other smaller towns. Of the 43 uncertified causes of death, 8 were recorded in Birmingham, 3 in London, 3 in Gloucester, 3 in Liverpool, and 2 each in Portsmouth, in St. Helens, in Southport, in Darlington, and in Carlisle.

In the 96 English and Welsh towns, with populations exceeding 50,000 at the last Census, and whose aggregate population at the middle of this year is estimated at 17,852,766 persons, 9266 births and 4569 deaths were

registered during the week ended Saturday, August 16th. The annual rate of mortality in these towns, which had been 11·0, 11·6, and 12·0 per 1000 in the three preceding weeks, further rose to 13·3 per 1000 in the week under notice. During the first seven weeks of the current quarter the mean annual death-rate in these towns averaged 11·7, against 11·0 per 1000 in London during the same period. Among the several towns the death-rates last week ranged from 2·4 in Ilford, 2·9 in Eastbourne, 4·4 in Bournemouth, 5·4 in Ealing, and 5·5 in Cambridge, to 18·8 in Bootle, 18·9 in St. Helens, 21·2 in Walsall, 21·8 in Wigan, and 21·9 in Birkenhead.

The 4569 deaths from all causes in the 96 towns were 444 in excess of the number in the previous week, and included 751 which were referred to the principal epidemic diseases, against numbers rising from 281 to 562 in the six preceding weeks. Of these 751 deaths, 581 resulted from infantile diarrhœal diseases, 56 from measles, 49 from whooping-cough, 34 from diphtheria, 22 from scarlet fever, 9 from enteric fever, and not one from small-pox. The mean annual death-rates from these diseases last week was equal to 2·2, against 1·3 and 1·6 per 1000 in the two preceding weeks. The deaths of infants (under 2 years of age) attributed to diarrhœa and enteritis, which had been 214, 264, and 391 in the three preceding weeks, further rose to 581 last week, and included 96 in London, 49 in Liverpool, 41 in Manchester, 35 in Birmingham, 29 in Birkenhead, and 27 in Bradford. The deaths referred to measles, which had been 77, 77, and 67 in the three preceding weeks, fell to 56 last week; 11 deaths occurred in London, 9 in Stoke-on-Trent, 6 in Liverpool, and 5 in Manchester. The fatal cases of whooping-cough, which had been 50, 47, and 45 in the three preceding weeks, rose again to 49 last week; of this number 7 were registered in London, 4 in Liverpool, and 4 in Bolton. The deaths referred to diphtheria, which had been 31, 36, and 25 in the three preceding weeks, rose again to 34 last week, and included 4 each in London, Birmingham, Liverpool, and Leeds, and 3 in Cardiff. The deaths from scarlet fever, which had been 15, 18, and 21 in the three preceding weeks, were 22 last week; 8 deaths occurred in London and 4 in Birmingham. The 9 deaths from enteric fever were about equal to the average in recent weeks, and included 3 in London.

The number of scarlet fever patients under treatment in the Metropolitan Asylums and the London Fever Hospitals, which had steadily increased from 1418 to 2131 in the preceding nine weeks, fell slightly to 2124 on Saturday last; 230 new cases were admitted during the week, against 346, 258, and 244 in the three preceding weeks. These hospitals also contained on Saturday last 855 cases of diphtheria, 202 of measles, 230 of whooping-cough, and 47 of enteric fever, and not one of small-pox. The 1047 deaths in London were 60 more than the number in the preceding week, and corresponded to an annual death-rate of 12·1 per 1000. The deaths referred to diseases of the respiratory system, which had been 107, 108, and 115 in the three preceding weeks, further rose to 130 last week, and were 11 above the number recorded in the corresponding week of last year.

Of the 4569 deaths from all causes in the 96 towns, 175 resulted from various forms of violence and 374 were the subject of coroners' inquests. The causes of 33, or 0·7 per cent., were not certified either by a registered medical practitioner or by a coroner after inquest. All the causes of death were duly certified in London, West Ham, Bristol, Leicester, Nottingham, Manchester, Salford, Bradford, Leeds, Hull, and Newcastle-on-Tyne, and in 67 other smaller towns. Of the 33 uncertified causes of death, 7 were recorded in Birmingham, 5 in Liverpool, 3 each in Stoke-on-Trent and in South Shields, and 2 in Sheffield.

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### HEALTH OF SCOTCH TOWNS.

In the 16 largest Scotch towns 1081 births and 609 deaths were registered during the week ended Saturday, August 9th. The annual rate of mortality in these towns, which had been 13·2, 13·1, and 14·8 per 1000 in the three preceding weeks, declined to 14·1 per 1000 in the week under notice. During the first six weeks of the current quarter the mean annual death-rate in these Scotch towns averaged 13·8, against 11·4 per 1000 in the 96 large English towns. Among the several Scotch towns the death-rates in the week under review ranged from 6·0 in Kilmarnock, 9·1 in Leith, and 10·4 in Perth, to 15·6 in Kirkcaldy, 16·8 in Ayr, and 22·6 in Dundee.

The 609 deaths from all causes were 34 below the number in the previous week, and included 79 which were referred to the principal epidemic diseases, against 64 and 61 in the two preceding weeks. Of these 79 deaths, 39 resulted from infantile diarrhœal diseases, 20 from measles, 10 from whooping-cough, 6 from diphtheria, 2 from enteric fever, and 2 from scarlet fever, but not one from small-pox. These 79 deaths from the principal epidemic diseases corresponded to an annual death-rate of 1·8, against 1·6 per 1000 in the 96 large English towns. The deaths of infants (under 2 years of age) attributed to diarrhœa and enteritis, which had been 13, 24, and 21 in the three preceding weeks, rose to 39 in the week under review, and included 25 in Glasgow, 4 in Dundee, 3 in Motherwell, and 2 in Paisley and in Leith. The deaths referred to measles, which had been 28, 18, and 16 in the three preceding weeks, rose to 20, and comprised 16 in Glasgow, 2 in Paisley, and 2 in Greenock. The fatal cases of whooping-cough, which had been 11, 15, and 14 in the three preceding weeks, declined to 10, and included 5 in Glasgow. The 6 deaths attributed to diphtheria, of which 2 occurred in Glasgow and 2 in Aberdeen, were slightly in excess of the average in the earlier weeks of the quarter. The 2 fatal cases of enteric fever were recorded in Glasgow, and those of scarlet fever in Edinburgh.

The deaths referred to diseases of the respiratory system, which had been 71, 63, and 83 in the three preceding weeks, were 79 in the week under notice; 27 deaths resulted from different forms of violence, against 24 and 21 in the two preceding weeks.

In the 16 largest Scotch towns, with an aggregate population estimated at 2,259,600 persons at the middle of this year, 1103 births and 567 deaths were registered during the week ended Saturday, August 16th. The annual rate of mortality in these towns, which had been 13·1, 14·8, and 14·1 in the three preceding weeks, further fell to 13·1 per 1000 in the week under notice. During the first seven weeks of the current quarter the mean annual death-rate in these Scotch towns averaged 13·7, against 11·7 per 1000 in the 96 large English towns. Among the several Scotch towns the death-rates last week ranged from 6·0 in Kilmarnock, 8·4 in Leith, 8·5 in Clydebank, and 8·8 in Falkirk, to 14·4 in Glasgow, 14·9 in Perth, 17·6 in Hamilton, and 19·2 in Coatbridge.

The 567 deaths from all causes were 42 below the number in the previous week, and included 80 which were referred to the principal epidemic diseases, against 61 and 79 in the two preceding weeks. Of these 80 deaths, 45 resulted from infantile diarrhœal diseases, 13 from measles, 11 from whooping-cough, 10 from diphtheria, and 1 from enteric fever, but not one from scarlet fever or from small-pox. These 80 deaths from the principal epidemic diseases corresponded to an annual death-rate of 1·8, against 2·2 per 1000 in the 96 large English towns. The deaths of infants (under 2 years of age) attributed to diarrhœa and enteritis, which had been 24, 21, and 39 in the three preceding weeks, further rose to 45 last week, and included 28 in Glasgow, 6 in Dundee, and 3 in Hamilton. The deaths referred to measles, which had been 18, 16, and 20 in the three preceding weeks, fell to 13 last week, and included 9 in Glasgow and 2 in Edinburgh. The fatal cases of whooping-cough, which had been 15, 14, and 10 in the three preceding weeks, rose slightly to 11 last week, and included 7 in Glasgow. The deaths from diphtheria, which had been 2, 5, and 6 in the three preceding weeks, further rose to 10 last week, of which 5 occurred in Glasgow and 2 in Aberdeen. The death from enteric fever occurred in Clydebank.

The deaths referred to diseases of the respiratory system, which had been 63, 83, and 79 in the three preceding weeks, fell to 44 last week; 28 deaths resulted from different forms of violence, against 28 and 27 in the two preceding weeks.

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### HEALTH OF IRISH TOWNS.

In the 27 town districts of Ireland 551 births and 357 deaths were registered during the week ended Saturday, August 9th. The annual rate of mortality in these towns, which had been 15·2, 16·4, and 16·6 per 1000 in the three

preceding weeks, declined to 15·5 per 1000 in the week under notice. During the first six weeks of the current quarter the mean annual death-rate in these Irish towns averaged 15·9 per 1000; in the 96 large English towns the corresponding rate did not exceed 11·4, while in the 16 Scotch towns it was equal to 13·8 per 1000. The annual death-rate in the week under review was equal to 17·9 in Dublin (against 11·4 in London and 14·7 in Glasgow), 15·1 in Belfast, 15·0 in Cork, 12·7 in Londonderry, 9·5 in Limerick, and 30·4 in Waterford, while in the 21 smaller towns the mean death-rate did not exceed 11·8 per 1000.

The 357 deaths from all causes were 24 fewer than the number in the previous week, and included 58 which were referred to the principal epidemic diseases, against 27 and 42 in the two preceding weeks. Of these 58 deaths, 47 resulted from infantile diarrhœal diseases, 7 from measles, 2 from diphtheria, 1 from scarlet fever, and 1 from whooping-cough, but not one from enteric fever or from small-pox. The mean annual death-rate from these diseases was equal to 2·5 per 1000; in the 96 large English towns the corresponding rate did not exceed 1·6, while in the 16 Scotch towns it was equal to 1·8 per 1000. The deaths of infants (under 2 years of age) attributed to diarrhœa and enteritis, which had been 16, 15, and 28 in the three preceding weeks, further rose to 47, and included 25 in Belfast, 17 in Dublin, and 3 in Cork. The deaths referred to measles, which had been 4, 5, and 8 in the three preceding weeks, were 7 in the week under notice, and comprised 6 in Waterford and 1 in Dublin. The 2 fatal cases of diphtheria occurred in Dublin, that of scarlet fever in Belfast, and that of whooping-cough in Galway.

The deaths referred to diseases of the respiratory system, which had been 56, 41, and 42 in the three preceding weeks, were 43 in the week under notice. Of the 357 deaths from all causes, 112, or 31 per cent., occurred in public institutions, and 9 resulted from different forms of violence. The causes of 6, or 1·7 per cent., of the total deaths were not certified either by a registered medical practitioner or by a coroner after inquest; in the 96 large English towns the proportion of uncertified causes of death did not exceed 1·0 per cent.

In the 27 town districts of Ireland, with an aggregate population estimated at 1,199,180 persons at the middle of this year, 616 births and 442 deaths were registered during the week ended Saturday, August 16th. The annual rate of mortality in these towns, which had been 16·4, 16·6, and 15·5 in the three preceding weeks, rose again to 19·2 per 1000 in the week under notice. During the first seven weeks of the current quarter the mean annual death-rate in these Irish towns averaged 16·4 per 1000; in the 96 large English towns the corresponding rate did not exceed 11·9, while in the 16 Scotch towns it was equal to 13·7 per 1000. The annual death-rate last week was equal to 18·6 in Dublin (against 12·1 in London and 14·4 in Glasgow), 20·9 in Belfast, 25·2 in Cork, 17·8 in Londonderry, 16·2 in Limerick, and 20·9 in Waterford, while in the 21 smaller towns the mean death-rate did not exceed 15·7 per 1000.

The 442 deaths from all causes were 85 above the number in the preceding week, and included 84 which were referred to the principal epidemic diseases, against 42 and 58 in the two preceding weeks. Of these 84 deaths, 63 resulted from infantile diarrhœal diseases, 7 from measles, 5 from whooping-cough, 4 from enteric fever, 4 from scarlet fever, and 1 from diphtheria, but not one from small-pox. The mean annual death-rate from these diseases last week was equal to 4·0 per 1000; in the 96 large English towns the corresponding rate did not exceed 2·2, while in the 16 Scotch towns it was equal to 1·8 per 1000. The deaths of infants (under 2 years of age) attributed to diarrhœa and enteritis, which had been 15, 28, and 47 in the three precedings weeks, further rose to 63 last week and included 27 in Dublin, 25 in Belfast, and 3 in Portadown. The fatal cases of measles, which had been 5, 8, and 7 in the three preceding weeks, were again 7 last week; 3 deaths occurred in Londonderry. The deaths from whooping-cough, which had been 4, 2, and 1 in the three preceding weeks, rose to 5 last week, and included 3 in Dublin. Three of the deaths from enteric fever and 3 of those from scarlet fever were registered in Belfast.

The deaths referred to diseases of the respiratory system, which had been 41, 42, and 43 in the three preceding weeks, were 51 in the week under notice. Of the 442 deaths from all causes, 128, or 29 per cent., occurred in public institutions, and 6 resulted from different forms of violence. The causes of 11, or 2·5 per cent., of the total deaths were not certified either by a registered medical practitioner or by a coroner after inquest; in the 96 large English towns the proportion of uncertified causes of death did not exceed 0·7 per cent.

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### VITAL STATISTICS OF LONDON DURING JULY, 1913.

In the accompanying table will be found summarised complete statistics relating to sickness and mortality in the City of London and in each of the metropolitan boroughs. With regard to the notified cases of infectious diseases it appears that the number of persons reported to be suffering from one or other of the ten diseases specified in the table was equal to an annual rate of 6·6 per 1000 of the population, estimated at 4,518,191 persons in the middle of the year; in the three preceding months the rates were 4·6, 4·8, and 5·4 per 1000 respectively. The lowest rates last month were recorded in Kensington, the City of Westminster, St. Marylebone, Hampstead, Stoke Newington, and Holborn; and the highest rates in Hammersmith, Poplar, Southwark, Battersea, Deptford, and Woolwich. The prevalence of scarlet fever showed a considerable increase over that recorded in the preceding month; this disease was proportionally most prevalent in Hammersmith, Fulham, Poplar, Bermondsey, Battersea, and Deptford. The number of scarlet fever patients under treatment in the Metropolitan Asylums Hospitals, which had been 1353, 1414, and 1579 at the end of the three preceding months, had further risen to 2093 at the end of last month; the weekly admissions averaged 312 last month, against 183, 184, and 232 in the three preceding months. Diphtheria was slightly more prevalent than it had been in the previous month; the greatest proportional prevalence of this disease was recorded in St. Pancras, the City of London, Shoreditch, Poplar, Southwark, Greenwich, and Woolwich. The Metropolitan Asylums Hospitals contained 886 diphtheria patients at the end of last month, against 792, 803, and 811 at the end of the three preceding months; the weekly admissions averaged 128, against 91, 105, and 116 in the three preceding months. The prevalence of enteric fever last month was greater than it had been in any of the five preceding months; among the several metropolitan boroughs this disease was proportionally most prevalent in Stoke Newington, Holborn, Stepney, Southwark, Deptford, and Woolwich. There were 50 enteric fever patients under treatment in the Metropolitan Asylums Hospitals at the end of last month, against 34, 41, and 35 at the end of the three preceding months; the weekly admissions averaged 10, against 4, 7, and 5 in the three preceding months. Erysipelas was proportionally most prevalent in Finsbury, Shoreditch, Bethnal Green, Stepney, Poplar, Southwark, and Deptford. The 37 cases of puerperal fever notified during the month included 5 in Islington, 5 in Wandsworth, 4 in Kensington, 4 in Fulham, and 3 in Southwark. The 7 cases of cerebro-spinal meningitis belonged respectively to Islington, Hackney, Finsbury, Poplar, Bermondsey, Lambeth, and Battersea; and the 14 cases of poliomyelitis included 2 each in Hackney, Shoreditch, and Lewisham.

The mortality statistics in the table relate to the deaths of persons actually belonging to the several boroughs, the deaths occurring in institutions having been distributed among the several boroughs in which the deceased persons had previously resided; the death-rates from all causes are further corrected for variations in the sex- and age-constitution of the populations of the several boroughs. During the five weeks ending August 2nd the deaths of 4597 London residents were registered, equal to an annual rate of 10·6 per 1000; in the three preceding months the rates had been 15·3, 12·9, and 11·1 respectively. The death-rates last month ranged from 7·8 in Lewisham, 8·1 in Fulham and in Wandsworth, 8·9 in St. Marylebone, 9·1 in Kensington and in Woolwich, and 9·2 in Greenwich, to 12·7 in Holborn and in Deptford, 13·0 in St. Pancras, 13·3 in the City of London, 13·5 in Finsbury, 13·9 in Southwark, and 14·0 in Bermondsey. The 4597 deaths from all causes included 380 which were referred to the principal infectious diseases; of these, 73 resulted from measles, 18 from scarlet fever, 28 from diphtheria, 57 from whooping-cough, 6 from enteric fever, and 198 from diarrhœa and enteritis among children under two years of age. No death from any of these

## ANALYSIS OF SICKNESS AND MORTALITY STATISTICS IN LONDON DURING JULY, 1913.

*(Specially compiled for* THE LANCET.)

| CITIES AND BOROUGHS. | Estimated population in the middle of 1913. | NOTIFIED CASES OF INFECTIOUS DISEASE. | | | | | | | | | | | | DEATHS FROM PRINCIPAL INFECTIOUS DISEASES. | | | | | | | | | Deaths from all causes. | Death-rate per 1000 living.† |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Small-pox. | Scarlet fever. | Diphtheria.* | Typhus fever. | Enteric fever. | Other continued fevers. | Puerperal fever. | Erysipelas. | Cerebro-spinal meningitis. | Poliomyelitis. | Total. | Annual rate per 1000 persons living. | Small-pox. | Measles. | Scarlet fever. | Diphtheria.* | Whooping-cough. | Enteric fever. | Diarrhœa and enteritis (under 2 years). | Total. | Annual rate per 1000 persons living. | | |
| LONDON... ... ... ... ... ... ... ... ... | 4,518,191 | — | 1680 | 676 | — | 81 | — | 37 | 364 | 7 | 14 | 2859 | 6·6 | — | 73 | 18 | 28 | 57 | 6 | 196 | 380 | 0·9 | 4597 | 10·6 |
| *West Districts.* | | | | | | | | | | | | | | | | | | | | | | | | |
| Paddington ... ... ... ... ... ... ... ... | 142,210 | — | 42 | 16 | — | 3 | — | — | 12 | — | 1 | 74 | 5·4 | — | 10 | — | — | 1 | — | 4 | 15 | 1·1 | 138 | 10·0 |
| Kensington ... ... ... ... ... ... ... ... | 171,284 | — | 47 | 10 | — | 4 | — | 4 | 13 | — | — | 78 | 4·7 | — | 1 | — | — | 3 | 1 | 6 | 11 | 0·7 | 150 | 9·1 |
| Hammersmith ... ... ... ... ... ... ... | 123,745 | — | 81 | 14 | — | 3 | — | — | 6 | — | — | 104 | 8·8 | — | 3 | 1 | — | 1 | — | 1 | 6 | 0·5 | 131 | 10·9 |
| Fulham ... ... ... ... ... ... ... ... ... | 157,117 | — | 79 | 20 | — | 2 | — | 4 | 12 | — | 1 | 118 | 7·8 | — | 2 | — | — | 5 | — | 3 | 10 | 0·7 | 118 | 8·1 |
| Chelsea ... ... ... ... ... ... ... ... ... | 64,598 | — | 26 | 8 | — | 1 | — | — | 4 | — | — | 39 | 6·3 | — | — | — | — | — | 1 | — | 1 | 0·2 | 62 | 9·5 |
| City of Westminster ... ... ... ... ... | 154,810 | — | 34 | 18 | — | 2 | — | 1 | 5 | — | — | 60 | 4·0 | — | — | 2 | 2 | — | 1 | 3 | 8 | 0·5 | 166 | 11·8 |
| *North Districts.* | | | | | | | | | | | | | | | | | | | | | | | | |
| St. Marylebone ... ... ... ... ... ... ... | 114,532 | — | 38 | 8 | — | 1 | — | 1 | 5 | — | — | 53 | 4·8 | — | — | — | — | — | — | 3 | 3 | 0·3 | 96 | 8·9 |
| Hampstead ... ... ... ... ... ... ... ... | 86,346 | — | 20 | 6 | — | — | — | — | 1 | — | — | 27 | 3·3 | — | — | 2 | — | 1 | — | 3 | 6 | 0·7 | 73 | 9·3 |
| St. Pancras ... ... ... ... ... ... ... ... | 214,330 | — | 52 | 44 | — | 3 | — | 2 | 25 | — | 1 | 127 | 6·2 | — | 1 | — | 1 | 3 | — | 17 | 22 | 1·1 | 267 | 13·0 |
| Islington ... ... ... ... ... ... ... ... ... | 325,585 | — | 111 | 40 | — | 3 | — | 5 | 12 | 1 | 1 | 173 | 5·5 | — | 5 | 2 | 1 | 2 | — | 10 | 20 | 0·6 | 349 | 10·9 |
| Stoke Newington ... ... ... ... ... ... ... | 50,518 | — | 2 | 9 | — | 2 | — | 1 | 4 | — | — | 18 | 3·7 | — | — | — | — | — | — | — | — | — | 52 | 10·2 |
| Hackney ... ... ... ... ... ... ... ... ... | 223,353 | — | 59 | 27 | — | 4 | — | 1 | 16 | 1 | 2 | 110 | 5·1 | — | 1 | 1 | 2 | 2 | — | 4 | 10 | 0·5 | 203 | 6 |
| *Central Districts.* | | | | | | | | | | | | | | | | | | | | | | | | |
| Holborn ... ... ... ... ... ... ... ... ... | 46,949 | — | 4 | 3 | — | 2 | — | — | 2 | — | 1 | 12 | 2·7 | — | 1 | — | 1 | — | — | 2 | 4 | 0·9 | 57 | 12·7 |
| Finsbury ... ... ... ... ... ... ... ... ... | 84,679 | — | 35 | 12 | — | 2 | — | — | 19 | 1 | — | 69 | 8·5 | — | — | — | 1 | 1 | — | 6 | 8 | 1·0 | 111 | 13·5 |
| City of London ... ... ... ... ... ... ... | 17,916 | — | 3 | 4 | — | 1 | — | — | 1 | — | 1 | 10 | 5·8 | — | — | — | — | — | — | — | — | — | 22 | 13·3 |
| *East Districts.* | | | | | | | | | | | | | | | | | | | | | | | | |
| Shoreditch ... ... ... ... ... ... ... ... | 109,654 | — | 35 | 27 | — | 3 | — | 2 | 19 | — | 2 | 88 | 8·4 | — | — | — | 1 | 5 | — | 9 | 15 | 1·4 | 116 | 11·4 |
| Bethnal Green ... ... ... ... ... ... ... | 127,824 | — | 46 | 22 | — | 3 | — | 1 | 22 | — | — | 93 | 7·6 | — | 3 | — | — | — | — | 12 | 15 | 1·2 | 138 | 11·7 |
| Stepney ... ... ... ... ... ... ... ... ... | 275,300 | — | 87 | 39 | — | 7 | — | 1 | 34 | — | — | 168 | 6·4 | — | 5 | — | 3 | 5 | 1 | 24 | 38 | 1·4 | 297 | 11·8 |
| Poplar ... ... ... ... ... ... ... ... ... | 160,913 | — | 79 | 31 | — | 1 | — | — | 21 | 1 | 1 | 134 | 8·7 | — | 3 | — | 3 | 1 | — | 12 | 19 | 1·2 | 187 | 12·0 |
| *South Districts.* | | | | | | | | | | | | | | | | | | | | | | | | |
| Southwark ... ... ... ... ... ... ... ... | 188,487 | — | 73 | 59 | — | 5 | — | 3 | 25 | — | — | 165 | 9·1 | — | 6 | — | 3 | 4 | 1 | 14 | 28 | 1·5 | 249 | 13·9 |
| Bermondsey ... ... ... ... ... ... ... ... | 124,739 | — | 69 | 10 | — | 1 | — | — | 12 | 1 | — | 93 | 7·8 | — | 5 | — | — | 3 | — | 10 | 18 | 1·5 | 168 | 14·0 |
| Lambeth ... ... ... ... ... ... ... ... ... | 297,139 | — | 112 | 24 | — | 5 | — | 2 | 14 | 1 | — | 158 | 5·5 | — | 8 | 2 | 2 | 6 | — | 19 | 37 | 1·3 | 337 | 11·6 |
| Battersea ... ... ... ... ... ... ... ... ... | 167,464 | — | 128 | 26 | — | 3 | — | — | 7 | 1 | — | 165 | 10·3 | — | — | 2 | 2 | 3 | — | 5 | 12 | 0·7 | 162 | 10·2 |
| Wandsworth ... ... ... ... ... ... ... ... | 330,395 | — | 112 | 25 | — | 6 | — | 5 | 16 | — | 1 | 165 | 5·2 | — | 4 | 2 | — | 1 | — | 9 | 16 | 0·5 | 257 | 8·1 |
| Camberwell ... ... ... ... ... ... ... ... | 261,805 | — | 85 | 31 | — | 3 | — | — | 15 | — | — | 134 | 5·3 | — | 1 | — | — | 2 | 1 | 9 | 13 | 0·5 | 236 | 9·3 |
| Deptford ... ... ... ... ... ... ... ... ... | 109,280 | — | 89 | 18 | — | 3 | — | 2 | 18 | — | — | 130 | 12·4 | — | 4 | — | 2 | 4 | — | 7 | 17 | 1·6 | 135 | 12·7 |
| Greenwich ... ... ... ... ... ... ... ... | 96,015 | — | 23 | 26 | — | 1 | — | 2 | 11 | — | — | 63 | 6·8 | — | 6 | — | — | 1 | — | 2 | 9 | 1·0 | 87 | 9·2 |
| Lewisham... ... ... ... ... ... ... ... ... | 168,822 | — | 57 | 32 | — | 4 | — | — | 6 | — | 2 | 101 | 6·2 | — | 3 | 2 | 2 | 2 | — | 1 | 10 | 0·6 | 128 | 7·8 |
| Woolwich ... ... ... ... ... ... ... ... ... | 122,382 | — | 53 | 67 | — | 3 | — | — | 7 | — | — | 130 | 11·1 | — | 1 | 2 | 2 | 1 | — | 3 | 9 | 0·8 | 105 | 9·1 |
| Port of London ... ... ... ... ... ... ... | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |

* Including membranous croup. † The death-rates are corrected for variations in sex- and age-constitution of the populations of the several boroughs, the population of England and Wales being taken as the standard.

diseases was recorded last month in Stoke Newington or the City of London; among the other boroughs they caused the lowest death-rates in Hammersmith, Chelsea, the City of Westminster, St Marylebone, Hackney, Wandsworth, and Camberwell, and the highest rates in Shoreditch, Stepney, Southwark, Bermondsey, Lambeth, and Deptford. The 73 deaths from measles were 58 below the corrected average number in the corresponding period of the five preceding years; this disease was proportionally most fatal in Paddington, Hammersmith, Southwark, Bermondsey, Lambeth, Deptford, and Greenwich. The 18 fatal cases of scarlet fever showed a decline of 8 from the corrected average number, and included 2 each in the City of Westminster, Hampstead, Islington, Lambeth, Battersea, Wandsworth, Lewisham, and Woolwich. The 28 deaths from diphtheria were 12 fewer than the corrected average, and included 3 each in Stepney, Poplar, and Southwark. The 57 fatal cases of whooping-cough were 20 below the corrected average number; this disease was proportionally most fatal in Fulham, Shoreditch, Bermondsey, and Deptford. The 6 deaths from enteric fever were 4 below the corrected average number, and belonged respectively to Kensington, Chelsea, the City of Westminster, Stepney, Southwark, and Camberwell. The mortality from diarrhœa and enteritis among children under 2 years of age was proportionally greatest in St. Pancras, Shoreditch, Bethnal Green, Stepney, Poplar, Southwark, and Bermondsey. In conclusion, it may be stated that the aggregate mortality in London last month from the principal infectious diseases, excluding diarrhœa, was 35·9 per cent. below the average.

## THE SERVICES.

### ROYAL NAVY MEDICAL SERVICE.

THE following appointments have been notified:—Fleet-Surgeons: W. E. Mathew to the *Cochrane;* M. L. M. Vaudin to the *Triumph*, for medical charge on voyage out, and for Wei-hai-wei sick quarters; R. S. Bernard to the *Triumph*, on relieving the *Tamar;* and T. W. Philip to the *Queen Mary*, on commissioning. Staff-Surgeons: W. C. B. Smith to the *Pembroke*, additional, and to the *London*, H. B. Hill to the *Wildfire*, additional, for Royal Naval Barracks and Dockyard, Sheerness, W. G. Edwards to His Majesty's Dockyard, Portsmouth, and R. F. MacMahon to Plymouth Hospital, all temporary; E. A. G. Wilkinson to the *Victory*, additional, and to the *Neptune;* F. J. Gowans to the *Queen Mary*, on commissioning; E. R. Townsend to the *Forth;* F. J. L. P. McKenna to the *Donegal;* L. C. Hunt to the *Triumph*, additional, for Hong-Kong Yard, on relieving the *Tamar;* A. I. Sheldon to the *Philomel;* and T. G. Blunt to the *Rosario*. Surgeons: G. A. Finegan to the *Blenheim;* G. D. G. Fergusson to the *Clio;* H. St. C. Colson to the *Suffolk;* F. H. Holl to the *Torch*, additional, and on recommissioning; A. Fairley to the *Merlin*, on recommissioning; W. E. Lloyd to the *Triumph*, on relieving the *Tamar;* A. E. Malone to the *Halcyon*, additional, for the *Spanker;* S. Bradbury to Plymouth Hospital, H. E. Perkins to Chatham Hospital, and L. C. E. Murphy to Royal Marine Division, temporary.

### ARMY MEDICAL SERVICE.

Colonel Edmund J. E. Risk retires on retired pay (dated August 20th, 1913).

### ROYAL ARMY MEDICAL CORPS.

The undermentioned to retire on retired pay:—Lieutenant-Colonel Walter C. Beevor, C.M.G. (dated August 20th, 1913), and Captain John C. Hart (dated August 20th, 1913).

Lieutenant Noel T. Whitehead, from the Seconded List, is restored to the establishment (dated July 26th, 1913).

The undermentioned Lieutenants are confirmed in their rank:—Walter W. Pratt, Cuthbert J. H. Little, Edward P. A. Smith, James B. A. Wigmore, Charles C. Jones, Arthur A. M. Davies, Leslie Dunbar, Henry Beddingfield, Frederick C. Davidson, John F. O'Connell, Stanley D. Large, Cyril Helm, William O. W. Ball, John Crocket, Humfrey N. Sealy, Albert Jackson, Edward C. Beddows, Conyngham V. Thornton, John Rowe, William P. Croker, Arthur H. Bridges, Aubrey G. Brown, and Robert Hemphill.

The undermentioned to be Lieutenants (on probation) (dated July 25th, 1913):—Ernest Wentworth Wade, Bernard Woodhouse, William Kenneth Morrison, Edgar Percival, and Henry Charles Deans Rankin.

The undermentioned Lieutenants are seconded under the provisions of Article 300, Royal Warrant for Pay and Promotion, 1909 (dated July 25th, 1913):—Ernest W. Wade, Bernard Woodhouse, William K. Morrison, and Edgar Percival.

Lieutenant-Colonel J. J. Gerrard, senior medical officer, West Africa, has arrived home on leave of absence from the Sierra Leone Protectorate. Lieutenant-Colonel T. Du B. Whaite, senior medical officer at the Royal Arsenal, Woolwich, has been placed under orders for a tour of service in India during the coming trooping season, and on arrival will be appointed for duty with the Northern Army. Lieutenant-Colonel O. L. Robinson has been granted five months' leave of absence. Lieutenant-Colonel H. D. Rowan, at present in charge of the Military Hospital at Tidworth, Salisbury Plain, has been ordered to join the Dublin District on Oct. 1st next to take over charge of the King George V. Military Hospital at Arbor Hill, in succession to Lieutenant-Colonel W. C. Beevor, C.M.G. Lieutenant-Colonel T. B. Winter has rejoined at Colchester. Lieutenant-Colonel G. D. Hunter, D.S.O., Commandant at the Royal Army Medical Corps School of Instruction, Aldershot, has been placed under orders for a tour of service abroad. Lieutenant-Colonel H. J. Pocock has been transferred from the Military Hospital at Campbellpore Cantonment to Murree Cantonment and appointed Senior Medical Officer.

Major J. A. O. MacCarthy has been transferred from the Military Hospital at Hounslow to the Woolwich District and appointed to the Royal Herbert Military Hospital. Major H. K. Palmer has taken up duty in the Aden Brigade on transfer from the Fifth (Mhow) Division. Major L. Wood has left Hyderabad, Sind, for duty at Quetta. Major A. W. N. Bowen has arrived home on leave of absence from the Military Hospital at Kirkee Cantonment. Major G. B. Crisp, at present employed on recruiting duty in the London District, has been placed under orders for a tour of service in the South China Command during the coming trooping season. Major W. A. Woodside has been transferred from the Military Hospital at Agra Cantonment to Chakrata. Major T. E. Fielding has taken up duty in the Devonport District on the termination of leave of absence. Major J. L. Robinson has been transferred from the Military Hospital at Peshawar Cantonment to Cherat. Major C. E. Fleming has joined the Military Hospital at Pretoria on transfer from Potchefstroom. Major M. W. Falkner has arrived home on leave of absence from Bermuda. Major H. W. H. O'Reilly, in menical charge of the Detention Barracks and effective troops at Colchester, has been placed under orders for a tour of duty with the Southern Army in India.

Captain J. H. Campbell has joined the Scottish Command for a tour of duty. Captain R. G. Meredith has been placed under orders for a tour of service in Ceylon. Captain G. G. Tabuteau has been selected for appointment as Specialist in Operative Surgery to the Cork District in succession to Captain W. F. H. Vaughan, whose tenure of the appointment has expired. Captain D. Ahern has arrived home on leave of absence from the Military Hospital at Cairo. Captain G. B. Edwards has been appointed to the Northern Command. Captain A. E. S. Irvine has taken up duty in the Belfast District on the expiration of leave of absence. Captain H. Stewart has arrived home for duty from Ferozepore. Captain A. Dawson has joined the Curragh Camp. Captain J. G. Bell has been placed under orders to proceed to the Straits Settlements for a tour of duty, embarking on Sept. 3rd. Captain D. F. McKenzie has been granted an extension of his Indian tour of service for one year. Captain D. Coutts has been transferred from the Military Hospital at Bareilly Cantonment to Ranikhet. Captain R. G. Anderson has arrived home on leave of absence from the Egyptian Army. Captain R. A. Bryden has been appointed to the Western Command. Captain P. Power has been appointed to the Southern Army in India, embarking on Sept. 24th. Captain J. J. O'Keefe has been transferred from Meerut Cantonment to Naini Tal. Captain V. T. Carruthers has been appointed to the Eastern Command for a tour of duty. Captain L. Cotterill, Instructor in Musketry at the Royal Army Medical Corps Depôt, has been placed under orders for a tour of duty with the Northern Army in India. Captain E. J. Kavanagh has been appointed

to the Military Hospital at Chatham on return home from India, tour expired. Captain C. A. T. Conyngham has been transferred from the Fourth (Quetta) Division to the Fifth (Mhow) Division of the Southern Army in India. Captain M. P. Leahy has joined the Dublin District for duty on return from Kirkee. Captain C. W. O'Brien has been appointed to the London District. Captain R. H. MacNichol, Specialist in Dermatology and Venereal Diseases at the Royal Herbert Hospital, Woolwich, has been detailed to proceed to Malta for a tour of service. Captain R. D. O'Connor has been transferred from the Military Hospital at Multan Cantonment to Murree. Captain A. C. A. Amy has been granted seven and a half months' leave of absence home from India. Captain A. C. Osborn has been transferred from the Military Hospital at Hilsea to the Salisbury Plain District, and appointed to hold medical charge of Rolleston Camp.

Lieutenant S. D. Large has been appointed to the Aldershot Command for a tour of duty. Lieutenant R. Davidson has been placed under orders to proceed to India for duty with the Northern Army. Lieutenant F. A. Robinson has joined the Military Hospital at Mhow. Lieutenant S. H. Smith has been appointed to the Eastern Command. Lieutenant W. A. Frost on arrival in India has been appointed to the Military Hospital at Poona to undergo a course of sanitation. Lieutenant E. T. Gaunt has arrived home on leave of absence from the Military Hospital at Malta. Lieutenant F. C. Davidson has been appointed to the Scottish Command. Lieutenant W. B. Laird has been appointed to the Southern Army in India for a tour of duty. Lieutenant P. Hayes has been transferred from the Military Hospital at Secunderabad Cantonment to Wellington for duty at the Military Sanatorium. Lieutenant E. C. Beddows has been ordered to join the Irish Command. Lieutenant C. J. Little has been appointed to the Northern Command. Lieutenant W. F. Christie has been placed under orders to embark for a tour of duty in the Straits Settlements on Sept. 3rd. Lieutenant C. V. Thornton has been ordered to join the Irish Command for duty, and on arrival will be posted to the Dublin District. Lieutenant W. T. Graham has been transferred from the Military Hospital at Lucknow Cantonment to Multan for duty at the Station Hospital. Lieutenant C. D. K. Seaver has taken up duty at Dalhousie on transfer from the Military Hospital at Rawal Pindi Cantonment. Lieutenant F. S. Tamplin has left the Royal Victoria Hospital at Netley for a tour of duty at Gibraltar.

### INDIAN MEDICAL SERVICE.

The King has approved of the promotion of the following officers:—

Captains to be Majors (dated Dec. 27th, 1912): Fred William Sumner; (dated June 27th, 1913) William Duncan Ritchie, John Kenneth Sprot Fleming, Evelyn Charles Hepper, George Charles Lovell Kerans, Christopher Birdwood McConaghy, John Beresford Christian, Andrew Murphy, Frederic Troughton Thompson, Laurence Percival Brassey, Colin Forbes Marr, and Patrick Laurence O'Neill.

Lieutenant to be Captain (dated Jan. 29th, 1913): Cecil George Howlett.

The King has also approved of the retirement of the following officers:—

Lieutenant-Colonel Mackintosh Alexander Thomas Collie (dated June 30th, 1913), Lieutenant-Colonel Eric Harding Sharman (dated August 1st, 1913), and Captain Richard Francis Chetwynd Talbot (dated July 24th, 1913).

Lieutenant-Colonel C. H. James, C.I.E., has taken up duty as Civil Surgeon at Simla, West. Lieutenant-Colonel J. Crimmin, V.C., Port Medical Officer of Health, Bombay, has arrived home from India on leave of absence. The services of Lieutenant-Colonel C. Duer, late civil surgeon at Simla, West, have been placed at the disposal of the Government of Burma. Lieutenant-Colonel J. K. Close, civil surgeon at Allahabad, has been granted privilege leave of absence for six weeks. The services of Lieutenant-Colonel H. B. Melville, civil surgeon at Benares, have been placed at the disposal of the Home Department of the Government of India for employment as Civil Surgeon at Delhi.

Major A. M. Fleming has been appointed to officiate as Civil Surgeon of the First Class in succession to Lieutenant-Colonel H. E. Banatvala, appointed to officiate as Inspector-General of Civil Hospitals in the Central Provinces. Major A. Leventon, civil surgeon at Dibrugarh, Assam, has been granted 18 months' combined leave of absence home from India. Major A. Fenton has been appointed to officiate as Superintendent of the Lunatic Asylum at Rangoon, in succession to Major W. H. Cox, D.S.O., granted leave of absence home from India for one year on medical certificate. Major W. M. Anderson has been selected for appointment as Agency Surgeon at Haraoti. Major R. H. Heard has taken up duty at the Government Medical College, Lahore, as Professor of Midwifery, on return from leave of absence. Major G. Y. C. Hunter has been selected for appointment as Superintendent of the Buxar Central Jail. Major Jay Gould has taken up duty as Assistant Director-General, Indian Medical Services (Stores). Major A. W. Tuke has arrived home on leave of absence from India. Major J. W. Lethbridge, Second Class Agency Surgeon, Madras Presidency, has been granted two years' furlough. Major E. O. Thurston has been appointed to officiate as Professor of Surgery at the Medical College, Calcutta, and Surgeon to the College Hospital during the absence on leave of Lieutenant-Colonel R. Bird, M.V.O., C.I.E.

Captain J. V. MacDonald has had his services placed at the disposal of the Chief Commissioner of Assam for appointment as Medical Officer to the Lakhimpur Military Police in the North-Eastern Frontier. The services of Captain W. R. J. Scroggie, at present officiating as civil surgeon at Coorg, have been replaced at the disposal of the Government of Madras Presidency. Captain R. I. Binning has been selected for appointment as Specialist in Midwifery and Diseases of Women and Children. Captain F. F. Elwes, C.I.E., has been granted leave of absence for one month. Captain E. W. C. Bradfield has been appointed to officiate as Civil Surgeon of the Fourth Madras District. The services of Captain O. A. R. Berkeley Hill have been replaced at the disposal of the Government of India. Captain J. Lunham has been appointed to officiate as Civil Surgeon at Karwar during the absence on leave of Major W. D. Keys. Captain W. P. G. Williams, officiating superintendent at the Central Prison, Bareilly, has been granted privilege leave combined with leave home from India on medical certificate for ten months. Captain R. A. Lloyd has been appointed to the Bilaspur District. Privilege leave for six weeks has been granted to Captain W. J. Fraser, civil surgeon at Chhindwara.

### SPECIAL RESERVE OF OFFICERS.

*Royal Army Medical Corps.*

Lieutenant Duncan Macfadyen to be Captain (dated August 26th, 1913).

Lieutenant George F. Randall, from the Seconded List, is restored to the establishment (dated June 21st, 1913).

The undermentioned Lieutenants are confirmed in their rank:—William C. Davidson, James Gosip, Ivan L. Waddell, James Rafter, and Francis O. L. Moore.

### TERRITORIAL FORCE.

*Royal Army Medical Corps.*

The appointment of Lieutenant-Colonel Thomas Robinson Glynn, M.D., 1st Western General Hospital, Royal Army Medical Corps, to, and the retirement of Honorary Colonel Richard Caton from, the Honorary Colonelcy of the Royal Army Medical Corps, Territorial Force, of the West Lancashire Territorial Division, is dated August 13th, 1913.

1st South Midland Mounted Brigade Field Ambulance, Royal Army Medical Corps: Alexander Leggat to be Lieutenant (dated July 19th, 1913).

3rd East Lancashire Field Ambulance, Royal Army Medical Corps: John Knowles Lund to be Lieutenant (dated July 2nd, 1913).

2nd Northumbrian Field Ambulance, Royal Army Medical Corps: Transport Officer and Honorary Lieutenant Alfred Johnson resigns his commission (dated August 20th, 1913).

2nd Welsh Field Ambulance, Royal Army Medical Corps: Major Edward T. Collins to be Lieutenant-Colonel (dated July 10th, 1913). John Wallace (late Lieutenant, 2nd Glamorganshire Royal Garrison Artillery (Volunteers)), to be Lieutenant (dated July 10th, 1913).

3rd Wessex Field Ambulance, Royal Army Medical Corps: Lieutenant Elliott B. Bird to be Captain (dated May 23rd, 1913).

1st Western General Hospital, Royal Army Medical Corps: Lieutenant-Colonel Nathan Raw, on completion of his period of service in command of a General Hospital, is

retired (dated August 20th, 1913). Major Archibald B. Gemmel to be Lieutenant-Colonel (dated August 20th, 1913).

Sanitary Service: Alfred Greenwood to be Major (dated August 20th, 1913). Major Alfred Greenwood is appointed Sanitary Officer of a Territorial Division (dated August 20th, 1913).

*Attached to Units other than Medical Units.*—Lieutenant Richard C. Clarke to be Captain (dated May 22nd, 1913). Lieutenant James L. Wilson resigns his commission (dated August 20th, 1913).

*For Attachment to Units other than Medical Units.*—Duncan Davidson to be Lieutenant (dated July 10th, 1913).

### DEATHS IN THE SERVICES.

Surgeon-Colonel John Richardson, I.M.S. (retired), in his seventy-seventh year, on August 13th. He served with the Bhutan expedition, 1864–66, and was present at the capture of Buxa and the Bala Pass and the storming of stockades above the Pass (medal with clasp). He was appointed an Honorary Physician to the King in 1903.

## BRISTOL AND WESTERN COUNTIES.

(FROM OUR OWN CORRESPONDENTS.)

### *Hospital Sunday Fund at Bristol.*

THE final statement of the Lord Mayor's Hospital Sunday Fund for 1913 shows that during the year £1957 was received, an increase of £63 over 1912. The number of collections made was 548, an increase of 18 compared with the previous year. The Bristol Hospital Sunday Fund was established 16 years ago, and only twice has the sum of £2000 been raised.

### *Bristol Tuberculosis Officer.*

The Bristol health committee at a special meeting recently interviewed five candidates for the position of tuberculosis officer for the city and county of Bristol. Mr. C. J. Campbell Faill, medical officer of the Redcliffe Tuberculosis Dispensary, Bristol, was unanimously elected to the post.

### *Bristol Insurance Committee: Medical Referee's Salary.*

Dr. B. M. H. Rogers, who was appointed to act as medical referee to the Bristol Insurance Committee for three months at £50, appealed for an increase of salary at the end of that period, stating that the number of cases referred to him had increased from 72 in the first to 100 in the last month. The chairman of the committee said the Government could not undertake responsibility for this salary, which should be paid by those who derived most benefit from the work of the referee—namely, the Approved Societies. An increase from £50 to £75 for the ensuing three months was approved.

### *Bristol Education Committee and Errors of Refraction.*

The Bristol Education Committee has offered to the Eye Hospital and Dispensary £100 and £50 respectively for the treatment of errors of refraction of the eye in school children, not more than 400 cases per annum at the former and 200 at the latter, with 5*s.* per head for each case in excess of these numbers, the patients to be seen at special hours, the Education Committee to check attendances and maintain order. This arrangement has been proposed because these two institutions have been encumbered in their work by the large increase in refraction cases coming to them as a result of school inspection.

### *School Clinics in Gloucestershire.*

Dr. J. M. Martin, school medical officer for the county of Gloucester, has reported in favour of the establishment of school clinics at Stroud and at Kingswood. The latter is an eastern suburb of Bristol, which, however, lies within the administrative area of Gloucestershire. As present there is no school clinic in Bristol, but Dr. Martin claims that it is necessary to establish these two if children are to be treated for those defects which are discovered by school medical inspection. He says that the number of children who have secured treatment for these defects has risen in three years from 65 to 80 per cent., a higher percentage than obtains within the Bristol area. The cost of equipping two clinics would, it is said, amount to £80, and the annual maintenance would cost £180.

### *The Slums of Exeter.*

At the last meeting of the Exeter city council exception was taken to a reported statement of the chairman of the health department of East Ham, London, that he thanked God they had no such buildings in East Ham as some of the houses in Exeter. It was remarked that East Ham was a "mushroom" compared with Exeter, that the city authorities were getting rid of many of these old houses, and that no doubt in the future many more would be demolished.

### *The National Insurance Act at Exeter.*

At the last meeting of the Insurance Committee for Exeter it was reported that 12,315 persons had accepted the panel doctors, leaving about 4000 still unallotted. The committee decided to arrange for the allocation of these cases. The total expenditure in connexion with the administration of the Act in Exeter was £3337, of which sum medical men and chemists had received £1600.

### *The Tenure of District Medical Officers.*

The Torrington (Devon) board of guardians recently appointed Dr. Clements and Dr. J. P. Lusk medical officers for the Winkleigh and Dolton districts respectively, but although these gentlemen resided in their districts the guardians, contrary to regulations, made the appointment for one year only. The Local Government Board demurred to this, and said the appointments must be made permanently. The guardians eventually decided to comply with the directions of the Local Government Board.

August 20th.

## SCOTLAND.

(FROM OUR OWN CORRESPONDENTS.)

### *Tuberculosis Treatment in Scotland.*

THE Local Government Board of Scotland, which has recently been in correspondence with the Treasury regarding certain questions which have arisen as to the method of distribution of the proposed maintenance grant in aid of the cost of treatment of tuberculosis, has issued a circular on the subject to clerks of local authorities. The Board points out that under Section 17 (1) of the National Insurance Act an Insurance Committee may extend sanatorium benefit to dependents of the insured, and where the county council or town council and the Treasury sanction the estimated expenditure, one-half of the excess of expenditure over the committee's funds available for sanatorium benefits will be paid out of the rates, and the other half out of the grant, Section 17 (3). In this case the grant will be paid to the Insurance Committee. For the remainder of the population—that is, the population other than the insured or dependents of the insured—the responsibility for treatment will rest with the public health local authority, who will receive payment out of the grant to the extent of one-half of their expenditure on tuberculosis incurred under schemes approved by the Board. If the county council or town council decline to sanction the estimated expenditure of the Insurance Committee, and if (for this or any other reason) the Insurance Committee's arrangements do not include treatment of all insured persons and dependents, then the responsibility for treating such persons and dependents as are not included in the committee's arrangements, as well as the remainder of the population, would fall on the public health local authority, and one-half of the cost would be met out of the grant. Among the conditions the Board propose to attach to participation in the maintenance grant are: That the scheme of the local authority for the prevention, detection, and treatment of tuberculosis shall have been approved by the Board, and shall continue to their satisfaction; that no grant shall be given towards the cost of treatment in an institution not approved by the Board; that the salaries, qualifications, duties, and respective relations to each other and to the medical officer of health, of the tuberculosis officer, the medical superintendent, and matron of the sanatorium, the medical officer and matron of the tuberculosis hospital, and the medical officer in charge of the tuberculosis dispensary, shall be approved by the Board. As regards grants payable to Insurance Committees under Section 17 (3) of the National Insurance Act, the final payment or adjustment

will be made by the Board on the expenditure as audited under Section 60 of the Act.

*Graceful Generosity.*

Of the £100 recently voted by the Aberdeen Insurance Committee to Dr. Matthew Hay, medical officer of health of Aberdeen, and professor of public health and forensic medicine in the University, for service and advice rendered by him to the committee since the passing of the Insurance Act, Dr. Hay has handed £50 to Dr. G. S. Banks, the assistant medical officer of health, who has also been closely associated with the work of the committee. The other £50 has been set aside by Dr. Hay as the nucleus of a fund which will be at the disposal of an after-care committee to be applied for the benefit of patients after they leave the hospital.

*The City Hospital, Aberdeen.*

The public health committee of the Aberdeen town council has decided, on the recommendation of the medical officer of health, to appoint a resident medical officer to the City Hospital, Aberdeen, at a salary of £200 per annum, and a resident assistant at a salary of £100 per annum. Formerly there was only one resident medical officer, but the work of the hospital has increased enormously of recent years, partly on account of the National Insurance Act and partly from other causes. Last year 1994 patients passed through the hospital, and there were as many as 340 cases in the hospital in a day. The recent extension will also entail extra work.

*Presentation to Dr. G. S. Trail, Strichen.*

At a recent meeting of the Buchan Medical Society Dr. G. S. Trail was presented with a silver-mounted inkstand bearing the following inscription: "Presented to Dr. Trail, Strichen, by the Buchan Medical Society on his semi-jubilee as secretary of the society." Dr. Trail was nominated secretary and treasurer to the society for the current year.

August 19th.

## IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

*The Question of Medical Advisers under the National Insurance Act.*

THE medical advisers appointed by the Irish Insurance Commissioners held a meeting recently in Galway, at which they constituted themselves a board of advisers to the Approved Societies and County Insurance Committees in that county. The following resolution was adopted:—

That our attention having been called to various statements made to the effect that our appointments as medical advisers to the Approved Societies will interfere with the proper discharge of our duties as dispensary doctors by taking us occasionally out of our districts for a short time, we beg to point out that the dispensary regulations never intended to confine a medical officer to his district all the year round. It is quite usual for dispensary doctors to attend meetings of the guardians and district councils, and attend the clerk's office on registration duty, sanitary and other matters, as well as to attend private patients out of their districts, and no objection has ever been made to this, although such temporary absence was often sudden and unforeseen. As medical advisers we have only to attend very occasional cases of persons claiming sick benefits where a doubt might arise. Moreover, the medical adviser has never to leave his district suddenly, as he has to arrange with the medical attendant of the insured person a day and hour for examination.

This resolution, as an attempt at defence, falls short of its object. The medical advisers say that they have only to attend "very occasional cases," but in the agreement which they have signed they undertake "to examine, free of charge, any insured person resident within the scheduled area who shall claim or be entitled to, or is in receipt of, sickness or disablement benefit." As the scheduled area must necessarily be much larger than the dispensary district, under these terms it would be essential for the medical adviser to be out of his district very frequently. In the light of the reply of the Vice-President of the Local Government Board to the deputation from the Irish Medical Association, an account of which appeared in THE LANCET of August 9th, it is clear that the Local Government Board does not consider that the medical advisers can carry out their duties as dispensary doctors under the present scheme. It was also stated at the meeting in Galway that there was no breach of etiquette in granting certificates to the patients of another doctor. The following resolution passed at a meeting of the County of Dublin Medical Organisation is an answer to this view:—

That in the opinion of the County of Dublin Medical Organisation the tenure of the post of medical adviser in respect of insured persons, either to the Irish Insurance Commissioners or to an Approved Society, without the sanction of the profession of the district, as expressed by the Local Medical Committee, is contrary to professional ethics.

The County of Dublin Medical Organisation also instructed their representatives on the Irish Medical Committee to call upon the licensing bodies to look upon the action of the medical advisers as procuring practice by unworthy means, and to deal with them accordingly. I may mention that the name of Dr. J. J. McGrath, the recently elected superintendent of Peamount Sanatorium, was included in a recent list of medical advisers to the Insurance Commissioners. Dr. McGrath has stated publicly that he is not acting, nor does he intend to act, in that capacity. Mr. M. J. Glancy, at Athlone, has also tendered his resignation as medical adviser, and in other districts difficulties are arising owing to the inability of the medical advisers to obtain coöperation from their fellow practitioners in cases of emergency or during their temporary absence.

A meeting of the county Wexford medical practitioners has unanimously adopted a resolution condemning the action of any medical man accepting a medical advisorship under the Insurance Act, and refusing to have any dealings professionally (except in urgent cases) or socially with any medical man accepting such appointments contrary to the wishes of the profession. A further resolution described the duties allotted to medical advisers, including, if necessary, the removal of dressings, &c., of other medical men's patients without their consent, as "a gross violation of medical etiquette," and expressed the opinion that medical men so acting should be reported to the General Medical Council.

*The Medical Profession in Cork and the National Insurance Act.*

The following two resolutions have been passed by the practitioners in county Cork:—

1. That in consequence of the tyrannical action of the Irish Insurance Commissioners in appointing medical advisers for the certification of insured persons for sickness and sanatorium benefits in Dublin, Limerick, and Waterford, in opposition to the unanimous opinion and wish of the Irish medical profession, the members of the Cork medical profession will at the earliest possible date (legally) take the necessary steps to effect repudiation of the panel system as at present administered, and obtain the resignations of all members of the profession in the borough who have signed agreements with the Commissioners.

2. That we, medical practitioners of the county of Cork, adhere to our previous resolution on the question of medical certification for sickness benefit under the Insurance Act—i.e., a minimum fee of 2s. 6d. per annum per insured person—and that we request members of the profession in County Cork who have joined the panel to consider their position, in view of the action of the Insurance Commissioners insisting on the appointment of medical advisers.

*Overcrowding in Irish Asylums.*

In the course of a discussion on the overcrowding of the Mullingar District Lunatic Asylum at a meeting of the joint committee, the resident medical superintendent said that there were 81 male and 88 female inmates too many in the asylum at present. The average increase per year had been 15 patients. It was decided to leave the matter over till the October meeting in order that Dr. Gavin might furnish a report on the feasibility of extending the short dormitories. According to a recent report of the resident medical superintendent of the Monaghan and Cavan Asylum, the number of patients in the asylum at present is 943. As accommodation was only provided for 793, there is considerable overcrowding; and if the admission rate continues at its present level, which is about 25 per month, it will be necessary for the committee to provide some temporary relief without delay. It is impossible to add beds, especially on the female side.

*The Medical Struggle in Londonderry.*

Some time ago, in accordance with the refusals of the local medical profession to accept the terms offered to them for attendance on insured persons, an office was opened and a public medical service established, the insured population being invited to join in the medical movement. To this departure the societies responded by bringing two medical men to Londonderry. These men, however, found that they could not keep pace with the work, and both left the city,

since when large numbers of the insured have joined the public medical service. In Limerick also I learn that one of the two practitioners imported upon similar grounds has resigned his position. The medical profession is to be congratulated on their victory.

*Typhoid Fever at Swords.*

Dr. Bryan O'Brien, medical inspector of the Local Government Board, has issued a report on the recent outbreak of typhoid fever at Swords. The first case was that of the wife of a dairyman, and there were 11 subsequent cases, in at least nine of which the patients appeared to have been in the habit of obtaining milk from the dairy. It is thought that the sudden outbreak was caused by infection by means of contaminated milk. The necessary steps to prevent the spread of infection have been taken. The total number of cases was 12, and no fresh case has occurred for a fortnight.

*Medical Appointment in Sligo.*

Mr. J. T. Heffernan, medical officer of the Cliffoney dispensary district, has been appointed to the Carney dispensary district at a salary of £120 a year, rising by triennial increments of £7 10*s.* until the maximum of £180 a year is reached.

August 19th.

## VIENNA.

(FROM OUR OWN CORRESPONDENT.)

*Cholera in Hungary and Austria.*

THE Balkan war is to blame for two disturbing conditions with which Austro-Hungary has to contend, one being a financial crisis and the other a threatened epidemic. Cholera has appeared in the frontier districts between this country and Servia, as well as on the Roumanian frontier. Although very careful observation has been kept on the traffic to and from the infected countries, smuggling cannot be completely suppressed, and the infection seems to have been introduced by this means. The danger is likely to become even greater than at present, for since demobilisation has been ordered in the Balkan kingdoms the soldiers returning home may easily spread the disease far and wide. Very stringent precautions, in addition to the usual quarantine methods, have been ordered by our Board of Health in order to exclude the disease and to suppress any outbreak. The comparative coolness of the weather is very favourable to the endeavours of the board, for if the temperature was high the innumerable hosts of flies which infest the southern provinces of the empire would be a serious hindrance to hygienic efficiency.

*Experiments with Tobacco Smoke.*

At a recent meeting of the Psychiatric Society of Vienna Professor von Frankl Hoshwarth read a paper on experiments which he had conducted with a view of ascertaining the effects of ordinary tobacco as compared with those of other tobacco, from which the nicotine had been extracted in various degrees. Turkish tobacco weighing 25 grammes was burnt in a small room during 20 minutes, and the changes produced in the blood pressure, the pulse-rate, and the velocity of psychic reaction were noted in persons who inhaled the air of the room. A number of persons were quite refractory to the effects of the smoke. Others showed at first euphoria, but at a later stage well-marked depression and the not infrequent alteration of the sense of taste called paragensia nicotinica. The blood pressure fell, while the pulse-rate increased in some persons and diminished in others. If the amount of 25 grammes of tobacco was smoked in the ordinary way the effects were the same, but came on more rapidly in the persons affected by the smoke. Tobacco which had been subjected to the process of extracting the nicotine four times showed none of these evil effects. Professor von Frankl therefore recommended that persons sensitive to nicotine ought not to be required to remain in crowded rooms where much smoking was going on, but that special rooms, kept free from tobacco smoke, should be available for them.

*Vacation Classes in the University of Vienna.*

In the month of September a number of classes, open to all qualified men, will be held by the assistants and *privatdocenten* of various medical departments of the University of Vienna. The classes continue for four weeks (24 attendances), and the fees are between £2 2*s.* and £3 3*s.* The subjects comprise: histology, pathological anatomy, pharmacognosy, materia medica, internal medicine (metabolism and hæmatology), pædiatrics (tracheotomy and intubation), rhinolaryngology (including the operative surgery of this region on both the cadaver and on patients), bronchoscopy, mental diseases, surgical diseases of the uropoietic system, massage, ophthalmology (especially as regards insurance and sight-testing), otology (especially syphilitic affections of the ear), dermatology (treatment of lupus), gynæcology and obstretrics (including operative procedures), and the treatment of dental diseases. These classes are intended mostly for medical graduates who during their summer vacation wish to fill up such gaps in their knowledge as might be caused by their being out of contact with medical teachers and specialists. In short, their object is to familiarise the practitioner with recent advances in practical medicine. The advantage is great, and ever since these classes have been instituted they have been well attended.

*Professor His and the University of Vienna.*

Professor His, who had been invited to take over the first medical clinic as successor to Professor von Noorden, has decided to remain in Germany on account of personal and family reasons. The incident is mortifying. The clinics in Vienna are now really up-to-date, and the attitude of scientists must have a personal explanation. It is said that nepotism makes itself felt amongst the Senate of the University, and that an outsider has to face a kind of opposition which is not to the taste of everybody. However that may be, the Senate now contemplates the appointment of a native professor, and will not come to a decision before autumn.

*"Flower Days" and Hospital Contributions.*

An easy and at the same time graceful means of encouraging public charity has been organised in this country by the institution known as "flower days." Since our hospitals, asylums, out-patient departments, and the like, are mainly Government property and under Government management, charitable gifts to them are very rare. The conditions, however, have changed lately in so far as some private charitable institutes have come into existence, and these now appeal for funds for hospitals. It has been decided to institute "flower days," the net income of which should be divided evenly amongst the institutes most in need of money. These "flower days" are held in each town twice a year, and the money so obtained is used also for other purposes which are none the less most praiseworthy—for the benefit of tuberculous children and incurables, for the first-aid ambulance, and for sending delicate children to the seaside. The sending of invalids to the seaside is a comparative novelty here; the health-giving properties of our warm, sandy, and sunny south coast have been used in this way only during the last 12 years.

August 18th.

## BERLIN.

(FROM OUR OWN CORRESPONDENT.)

*Central Institute for Radium.*

A Central Institute for Radium and Mesothorium has been established in connexion with the Hamburg Institute for Researches on Cancer and Tuberculosis. The institute is in possession of 300 milligrammes of radium, and is prepared to provide hospitals and clinics, and eventually medical practitioners, with the compound for curative purposes. The city of Düsseldorf has appropriated a sum of 250,000 marks (£12,500) for the purchase of radium. The price of radium will certainly become higher on account of the increasing demand for it.

*Visit of American Medical Men to Berlin.*

A party of American medical men lately visited Germany previously to attending the International Medical Congress in London. They were in Berlin from July 25th to 27th, and during their short stay they were shown over the principal hospitals and other medical institutions, such as the Army Medical School, the Empress Frederick House for Post-Graduate Study, the Institution for Infectious Diseases, &c. A committee formed under the presidency of Dr. Moll

entertained the Americans on the evening of July 26th at the garden restaurant in the Exhibition Park. Speeches were delivered by Professor Waldeyer, by Dr. Moll, and by some of the American visitors.

*The Etiology of Beri-beri.*

In a paper on beri-beri read at a recent meeting of the Berlin Medical Society, Dr. Moszkowski said that the hypothesis that beri-beri was due to an infection was no longer tenable, the prevalent opinion being that the disease was caused by a defect in the patient's food, especially an insufficient supply of phosphoric acid in organic compounds. He had found that peeled rice had a toxic action and that the pellicle of the grains of rice contained the antitoxin. He accordingly tried to produce beri-beri in himself by eating peeled rice in great quantities. Soon after the beginning of the experiment he suffered from constipation, headache, loss of appetite, and heartburn. Giddiness, paresthesia, nervous pains, abnormal softness of the pulse, a soporous state, slight œdema, and finally effusion into the sheaths of the tendons followed. The heart showed dilatation of both sides, a cardiac murmur at the apex, and an increase of the second sound over the pulmonary artery. The dilatation increased, and finally symptoms attributable to the vagus nerve were produced. The sensible symptoms were also characteristic for beri-beri, including formication, Lasègue's symptom, increase of the reflexes. The motor nerves were less damaged. The aspect of the disease might be compared with sensible neuritis. When rice bran was added to the food all the symptoms promptly disappeared. An investigation of the metabolism proved that the albuminous substances had undergone extensive destruction which could be caused only by toxic influence. When pigeons were fed on eggs and peeled rice they also contracted beri-beri. Professor Caspari, of the Zuntz Laboratory, who had made the experiments on metabolism, said that the destruction of the albuminous substances could not be produced by under-feeding, but only by the action of a toxin. He mentioned that dogs might fast for six weeks without showing such symptoms, but that they became ill within three weeks after they had been fed on peeled rice. Beri-beri was in close connexion with scurvy. Different kinds of meal when deprived of bran produced polyneuritis. Epidemics of beri-beri have been observed in Labrador as a result of the use of bread made with flour from which the bran had been removed.

August 16th.

## NOTES FROM INDIA.

(FROM OUR OWN CORRESPONDENTS.)

*The Health Officer of the New Capital.*

A DISPATCH has recently been received from the Secretary of State sanctioning the conditions of the appointment of the health officer of the Delhi Municipality. He will be an officer of the Indian Medical Service employed in the sanitary department, and the tenure of the appointment will be for five years. It is understood that the post will be an addition to the cadre of the Indian Medical Service.

*Sanitation in the Punjab.*

The Punjab Sanitary Conference will be held at Simla from August 24th to 30th, under the presidency of the Financial Commissioner, the Hon. M. W. Fenton. All five Commissioners of divisions and a number of elected Deputy Commissioners will be among those attending. An interesting report on sanitation in the Punjab for 1912 shows that the death-rate for 1912 was only 26·63, in spite of a severe small-pox epidemic, against 42·7 for the previous quinquennium. In the Punjab there are only three towns, of the size of Cork or Dublin, where the death-rates were 28·54, 38·33, and 26·23 respectively. The conclusion from the comparisons to rates in Europe is that the Punjab in a favourable year is healthier than several European countries, though it has still much way to make up to reach the level of the more advanced states. It is the seasonal epidemic which disturbs the death-rate. There is a growing desire in India for sanitation.

*The St. John Ambulance Brigade.*

The Viceroy and Lady Hardinge were recently "at home" at Viceregal Lodge to the Simla Nursing and Ambulance Divisions of the St. John Ambulance Brigade. During the afternoon His Excellency presented the Gwalior ambulance challenge shield for Regular Troops to a deputation from the 14th Hussars, and the Dewas ambulance challenge shield to a deputation from the Kashmir Imperial Service Infantry. In presenting the shields to the winners His Excellency expressed his deep interest in ambulance work in India and congratulated the deputations on the efficiency indicated by their success in the All-India competitions. The excellent services of the Simla nursing division in Delhi during the outrage are still fresh in the public memory.

*Sanitation in Bengal.*

The Government resolution on sanitation in Bengal for 1912 shows that the death-rate had increased chiefly from fever and cholera, and the Governor in Council reasonably asks how far, if at all, this increase is due to unusual variation in rainfall, which is not discussed in the Sanitary Commissioner's report. The birth-rate shows an increase which would have been greater, it is considered, if the price of foodstuffs had not been so high. The birth-rate is 35·3 per 1000, with a death-rate of 29·77, which, for the Presidency, is considered favourable in comparison to other provinces. There was a very heavy infantile death-rate, and in this respect Calcutta has been surpassed by the districts of Jalpaiguri and Dinajpore, where the rates were as high as 28·69 and 26·26 respectively. Plague was chiefly confined to the area of Calcutta and its suburbs. Cholera was prevalent in every district except Darjeeling. There was also an increase in the small-pox mortality compared with that of 1911. In spite of the extra distribution of quinine by sub-assistant surgeons and other antimalaria measures, there was an increase in the malaria returns. It is stated in the report that clearance of jungle and tanks and the destruction of mosquitoes have not proved successful, and a more extended use of quinine is put forward, on present knowledge, as the only method by which it is possible to reduce the rate of mortality and the risk of infection. I regret to see so sweeping a statement with no inquiry into the causes of failure. It would point to some mal-administration in the method of quinine distribution, jungle cutting, tank treatment, and other methods of mosquito destruction. Such methods, if correctly applied and supervised, should have resulted in a lowered death-rate, and there seems a necessity for an inquiry into the methods of carrying out these antimalaria measures. The matter is of far too much importance to be thrown aside by so sweeping a statement when the chances of mal-administration are so great.

July 31st.

## AUSTRALIA.

(FROM OUR OWN CORRESPONDENT.)

*King's Birthday Honours.*

THE members of the medical profession throughout Australia are much gratified at the inclusion of Sir A. MacCormick, M.D., of Sydney, in the list of new knights in honour of the King's birthday. Sir A. MacCormick, who is a graduate of the University of Edinburgh, came to Sydney as an assistant to Professor Anderson Stuart. He devoted his attention to surgery, and after a few years at the University of Sydney decided to begin practice. He soon acquired a reputation as a singularly gifted operator, and took a leading position, not only in his own city, but among Australian surgeons generally. For many years he has been surgeon to the Sydney Hospital and lecturer on surgery in the University. Sir A. MacCormick has never evinced any desire to take part in public questions, and has not contributed largely to literature, but his work is recognised inside the profession as exceptionally good, and satisfaction is expressed that his distinction is conferred purely as a tribute to professional merit.

*Small-pox in Sydney.*

For some weeks past cases of an eruption which has been diagnosed as chicken-pox have been occurring in Sydney. A number of such cases having occurred in a large clothing factory the proprietors asked the public health officials to inquire into the matter. One patient was in consequence sent to the Coast Hospital for observation, and as a result

the health authorities believe that upwards of 60 cases of small-pox of very mild type have occurred since April, the infection coming probably from Vancouver. At date of writing the Premier of New South Wales states there is no occasion for a panic, but the position has a serious aspect, as the population of New South Wales is practically unvaccinated.

*Brisbane Medical School.*

The proposal to establish a medical school at the University of Brisbane has come up for discussion. Considerable protest in opposition had been made by a section of country practitioners. Dr. E. S. Jackson proposed the scheme in a long address, in which he combated the idea that it would lead to overcrowding, and it was seconded by Dr. J. L. Gibson. An amendment to take a referendum of the branch on the matter was proposed by Dr. E. McDonnell (Toowoomba), and seconded by Mr. O. Smithson (Mount Morgan). The amendment was carried by 30 votes to 5, and on being put as the motion was carried unanimously.

*Venereal Diseases among Aboriginals.*

The annual report of the department in West Australia states that 52 natives suffering from venereal disease were sent to hospital, 120 were discharged during the year as cured, and 57 remained under treatment. Since the special hospitals received patients 405 have been treated, of whom 103 have died. This striking mortality is partly accounted for by the fact that many are moribund on admission. During the year an expedition to collect natives fit for lock hospitals was also directed to pay attention to the prevalence of leprosy. Only one leper was discovered. 2546 natives were in receipt of rations during the year. The report states that the treatment of natives by European employers is uniformly good.

*School Medical Inspection in New South Wales.*

The State Government has approved the appointment of ten additional (to the three original) medical inspectors of schools at a cost of £5000 a year. This sum will cover: (1) Administration; (2) investigation of epidemics; (3) medical examination of intending teachers; (4) lectures to teachers and trainers; (5) inspection of school buildings; (6) examination of school children; (7) first treatment in schools for ophthalmia; (8) lectures to nurses; and (9) visits to parents of defective children by nurses. The medical examination of children will include eyes, ears, nose, throat, and teeth. The heart and lungs will only be examined in special cases, as the aim is to attend to those defects most frequently found. Endeavours will be made to make the examination comparable with that of other States.

July 2nd.

POOR-LAW MEDICAL OFFICERS' ASSOCIATION OF ENGLAND AND WALES.—A council meeting of this association was held at 34, Copthall-avenue, E.C., on August 14th, Dr. Balding, J.P., presiding. The council considered a claim made by certain boards of guardians to receive the fees paid to in-door Poor-law medical officers by Insurance Committees for attendance on resident members of their staff who had become panel patients. The honorary secretary had brought it to the notice of the Insurance Act Committee of the British Medical Association, who had instructed the medical secretary to send a strong protest against such a practice to the Local Government Board. The honorary secretary had also brought the subject before the representative meeting at Brighton, where a resolution condemning the practice was unanimously carried. The council hoped that all their in-door Poor-law brethren would resist such unworthy treatment, and refuse to go on the panel, unless all fees paid by the Insurance Committees were handed over to them without deduction. Dr. Major Greenwood was unanimously elected as representative of the association upon the newly constituted Insurance Act Committee of the British Medical Association. The council then considered the arrangements for the next annual meeting, and it was resolved that this should be held at Burnley in 1914, and the arrangement should be left in the hands of Dr. Agnew, the Burnley representative on the council in conjunction with the honorary secretary.

# Obituary.

## EDWIN ELLEN GOLDMANN, M.D. FREIBURG,

HONORARY ORDINARIUS PROFESSOR OF SURGERY AT THE UNIVERSITY OF FREIBURG IN BADEN.

Professor E. E. Goldmann, whose death occurred on August 12th at Freiburg, was born on Nov. 12th, 1863, at Burghersdorp, South Africa, one of the three sons of Mr. B. N. Goldmann, and a brother of Mr. Charles Sydney Goldman, M.P. for Penryn and Falmouth. A delicate child he spent much time on the farms, but studied at the Albert Academy, Burghersdorp, and showed from his earliest years a love of learning and of art, displaying great aptitude in classics and music, and being much attracted by botany and zoology. He also learned to paint from his schoolmaster, and it may truly be said that on the farms of the Veldt and in the school at Burghersdorp he laid the foundations of his notable career. He received his later education at the University of Breslau and at Freiburg and London. He left South Africa at the age of 14 and came to Europe with his parents, who had recognised his unusual ability and especially his musical gifts. At Breslau he studied music and mathematics, read classics and philosophy, but on leaving the gymnasium, as the recipient of many prizes, he went to the University of Freiburg to study medicine. In 1888, shortly after he qualified, he worked under Professor Weigert in Frankfurt-am-Main, and in this way became a first-rate microscopist. Appointed first assistant of the Surgical Clinic at Freiburg, in 1891 he became a *privat-docent* and in 1895 extraordinary professor, being also appointed surgeon of the Diakonissen Krankenhaus.

Goldmann's first work was mainly in the direction of biological chemistry, but his name will always be associated with his discoveries in connexion with intravitam staining of tissues. In the splendid address in Pathology, delivered before the recent International Medical Congress, Professor Ehrlich refers to Goldmann's labours as among those that have definitely advanced both our knowledge and our opportunities of learning, and we have already pointed out in THE LANCET, where several of his suggestive papers appeared, that his line of investigation was one that might yield enormously valuable results. The introduction of methylene blue as a histological reagent by Ehrlich led to fruitful discoveries, but its injection into the living blood stream was precluded by its poisonous qualities. Goldmann, however, showed, notably in a communication which appeared in THE LANCET of May 4th, 1912, that other blue pigments do not possess this disadvantage, and that living animals injected with pyrrhol blue and isamine blue remain in unimpaired health, while subsequent microscopic sections prepared from their tissues show the dyes to be incorporated in certain granular cells scattered through the various organs. By means of the intravitam isamine blue stain it became possible to differentiate certain of the connective tissue corpuscles of the skin and subcutaneous region, the histogenetic migratory cell found in all organs except the nervous system, the stellate cells of the liver first described by Kupffer, the interstitial cell of the testicle, the cortical cells of the suprarenal body, and the epithelium of the renal tubules. As an improvement in mere microscopic technique the advance was thus an enormous one, but Goldmann also showed that the action of these cells in reference to this stain was a guide to the physiologist and pathologist in determining the functions of cells in reference to normal products of metabolism or other foreign (pathogenic) substances. The cells having the power of attracting the foreign dye were found to have the same power in reference to such materials as fat, glycogen, and iron. In the light of the knowledge obtained by the intravitam method of staining he pursued the subject in reference to the functions of the placenta, and showed that certain granular cells of that organ have the power of attracting nutrient materials from the maternal blood, and temporarily storing them before passing them on to the fœtal circulation for distribution to the embryonic tissues. These tissues in their turn have varying powers of selection for the substances in question, and the whole investigation was a striking example of the importance of the method for elucidating function.

It was the opinion of advanced pathologists that the method was destined to play an equally valuable rôle in the investigation of pathological processes, and such a summary of what Professor Goldmann has already found in his study of the spread of tuberculous infection when the bacilli of avian and bovine tuberculosis are introduced into the peritoneal cavity[1] sufficiently proves the point.

The following three memoirs give a full account of the remarkable series of researches in which Goldmann was engaged during 1909, 1911, and 1912: "Die äussere und innere Sekretion des gesunden und kranken Organismus im Lichte der 'Vitalen Farbung.'" Teil I. Separat-Abdruck from *Beiträge zur klinischen Chirurgie*. Band LXIV. 1909. "Studien zur Biologie der bösartigen Neubildungen." Tübingen: H. Laupp. 1911. "Neue Untersuchungen über die äussere und innere Sekretion des gesunden und kranken Organismus." Tübingen: H. Laupp. 1912. They show Goldmann's work as an outcome of Ehrlich's studies on dyes, and describe the discovery that certain dyes can be injected into animals without producing any injury, so that when the tissues, infiltrated with the stain, subsequently are examined in the killed animals, histological sections discover the pigment retained in certain kinds of cells only, differential staining being accomplished by this intravitam method. These books are abundantly illustrated with beautiful drawings of the author's histological preparations, and are provided with an excellent bibliography. We recommend their perusal to our readers, believing that they will realise in this way how really valuable to the medicine of the future Goldmann's work may turn out to be.

Dr. F. W. Mott, F.R.S., writes to us as follows:—

"Medical science has sustained a great loss in the sad death of Professor Goldmann, of Freiburg. His researches on vital staining of tissues exhibit remarkable perseverance and a high order of imagination, and they have been amongst the more important recent contributions to our knowledge of the processes underlying digestion and assimilation and of the physio-pathology of the choroid plexus. We have learnt from his work that the cerebro-spinal fluid receives from the choroid plexus important products (Stoffwechsel producte) which are carried to the nervous tissue. Also, that the plexus protects the nervous tissue from the penetration of toxic substances. Goldmann's researches have shown that the cerebro-spinal fluid functions as the lymph of the brain, and that it serves to nourish the nervous tissue and at the same time to protect it from harmful substances. His work is of especial importance to the neuro-pathologist, as it serves to explain the inefficacy of treatment by the injection of arsenic, antimony, and mercury in the treatment of sleeping sickness when once the trypanosome has invaded the central nervous system. This fact confirms the opinion previously expressed by me. Now that we know by Noguchi's researches, confirmed by others, that the spirochæta of syphilis exists in the brain tissues in general paralysis we can understand why salvarsan, so efficacious in other forms of syphilis, is of no avail in this disease because, as Goldmann's researches show, it cannot penetrate the choroid plexus and so enter the substance of the brain where the parasites are located. Thus the scientific work of Goldmann has proved to be of the greatest practical utility, and will no doubt lead to new methods being employed to combat these fatal diseases. His work was not known in this country until recently, but the more it is studied the more it will be appreciated by all who are interested in the advancement of medical science."

Goldmann was a remarkable man. He was a thoroughly well-read classic and retained his knowledge of Greek literature and familiarity with the principles of Greek art in spite of his arduous work in other directions. He found time to study the Florentine, Sienese, and Venetian schools of painting, and to read English widely as well as deeply. Indeed, his English father-in-law, the late Mr. R. Bosworth-Smith, of Harrow, said that Goldmann was the best-read man he had ever met, except James Bryce. He was so good a musician when young that his teachers deplored his not pursuing that art professionally; and by universal consent he was a great man of science.

He married Laura Bosworth-Smith six years ago, and leaves by her two little children. The cause of his death was malignant disease of the liver.

[1] THE LANCET, May 4th, 1912.

# Correspondence.

"Audi alteram partem."

## THE TREATMENT OF PULMONARY TUBERCULOSIS.

*To the Editor of* THE LANCET.

SIR,—Anyone attending the meetings of the Tuberculosis Conference held in London last week might well have come to the conclusion that at present the knowledge regarding the treatment of pulmonary tuberculosis was of a most unsatisfactory kind. This is the more to be deplored when hard and fast schemes are being urged upon the various local authorities. The papers on tuberculosis must have been most confusing to those with very little knowledge of the subject, and, so far as I could gather, were of a non-committal character except where tuberculin was severely condemned. Unfortunately there was no opportunity for discussion, which is my excuse for troubling you.

I may say at the outset that tuberculin, when given to suitable cases, under favourable conditions, and under adequate supervision, may be of considerable benefit in a number of cases; but at the same time, paradoxical as it may appear, I was pleased to hear it being condemned, for, after giving tuberculin consistently for nearly five years in a sanatorium, I am of opinion that if carelessly given it may be a great danger, and that rather than it should be given indiscriminately, as it has been done of late, it had better not be given at all. It will be something, at any rate, if, as a result of the conference, some of the present wild delirium about the benefits of tuberculin will be moderated, and that in the future more attention may be given to the clinical side of the subject and less to the hieroglyphics of injections of various kinds of tuberculins.

Tuberculin has been suggested in the first place to the public because it was cheap, so that its employment would save money over sanatoriums. If, however, the matter be inquired into, it will be found that unaccompanied by sanatorium treatment, which should imply adequate control, those cases which require treatment most must be denied any benefit which might follow its administration. Secondly, it has been urged as advantageous, because by this means a man can be treated without losing a day's work. Beneath this statement lies the worst fallacy of all, as no one has any right to treat a person who is sufficiently ill to require treatment at all without in the first place putting the patient to bed and taking his temperature correctly in the rectum. Furthermore, no such person should be allowed to arise until the temperature in the rectum, taken before rising in the morning, be as low as 36·5° C. If this course were followed by the family physician in obscure early cases the improvement in the majority of cases would be so great that no definite diagnosis would probably ever be made. The time required would often amount to less than a week or ten days, but it should be remembered that after the rest in bed return to exercise must be gradual. Such a course would cure most early cases which to the ordinary observer would appear afebrile.

I would suggest that the views of the profession are, and have always been, too much obscured by the consideration of cases which have become chronic through allowing them to walk about with so-called trivial symptoms. Such cases are the ones which require so many devices for their cure. Thus, graduated labour and tuberculin may be most useful in the treatment of chronic cases, though these also often require long periods of rest.

What is chiefly lacking in the many accounts of the results of tuberculin treatment is a knowledge of the natural history of the disease. If this were known it might save us a good many accounts as to results of treatment after experience of a year, or even six months. It would appear that from 60 to 75 per cent. of notified cases of pulmonary tuberculosis do not end fatally from this disease; we are therefore running great risks when we attempt to cast our net too widely, at the same time employing an agent which, in the words of Sir J. Kingston Fowler, "has lost none of its capacity for evil." It seems to me that what is chiefly required by an expert adviser is for him to know when the disease has become arrested. At the present time, in many

cases, patients are allowed to go on with obviously acute symptoms without any proper precautions being taken to stop the progress of the disease. Absolute rest in bed will, in nearly all cases, bring the disease to a standstill.

The cases which yield the most wonderful results to tuberculin treatment are surgical cases of all kinds, where, owing to immobility of the parts, the remaining tissues are not saturated by toxins. Success gained in treating surgical tuberculosis is not a safe guide when considering pulmonary tuberculosis. There would seem to be a class of case of pulmonary tuberculosis where, between the focus of disease and the healthy lung, a barrier is set up, intermediate in character, between the feeble barrier of acute early disease and the strong barrier of fibrosis, which represents a cure in chronic cases; and this, whilst allowing the lung to be gradually eaten away, at the same time prevents toxin from reaching healthy tissue. Such cases may have quite a lot of sputum, although the general symptoms are mild. It would seem that tuberculin, if it happens to be the right antigen, may bring this process to an end. The worst fallacy would seem to be to suppose that because such patients are cured by this agent, therefore early cases should be treated similarly.

At any rate, in the present perplexing state of our knowledge, it would seem incorrect to give diagnostic injections of tuberculin. We should also avoid what is called compensating cases, or giving sufficient tuberculin to produce tolerance of toxin, although the physical signs are increasing. Physical signs should diminish if the tuberculin is doing any good; if they do not, the tuberculin should be stopped at once.

I am, Sir, yours faithfully,

Ayrshire Sanatorium, August 9th, 1913. EDWARD E. PREST.

## PULMONARY TUBERCULOSIS IN SOUTH AFRICA.

*To the Editor of* THE LANCET.

SIR,—In Dr. A. J. Jex-Blake's interesting lecture on the "Relation of So-called 'Influenza' to Bronchitis and Tuberculosis," reported in THE LANCET of June 28th, one is necessarily impressed by the statistics. On the other hand, the term "influenza" has come to be so loosely employed that it would seem to be almost valueless as a point of statistical inquiry. That many cases of phthisis commence with an acute attack of fever, pains, and running from nose and eyes is beyond doubt. I recall one case that had been called "muscular rheumatism" which I saw in the second attack of "influenza" as called by the patient. The sputum abounded with tubercle bacilli and the patient became a chronic tubercular patient, in spite of open-air treatment on the Karroo where he developed it. This place has been much lauded in the past as a haven for phthisical patients, but one regrets to say that very few seem to do well here. In several cases I have seen the disease begin and end here in death in spite of open-air treatment, &c. This is very discouraging when one recalls the rosy prospects pictured to the phthisical patient who gives up everything to come to this country. Among the natives, who have little or no power of resistance, one almost comes to expect a rapidly fatal termination, as they simply refuse to remain in the open. I am, Sir, yours faithfully.

Cradock, South Africa, July 21st, 1913. KARL BREMER.

## SCHOOL MEDICAL INSPECTION IN INDIA.

*To the Editor of* THE LANCET.

SIR,—In the penultimate sentence of your annotation at p. 508 of THE LANCET of August 16th you suggest lack of information as to the extent to which school medical inspection has been practised in India. I may therefore state that the Madras Presidency has pursued this method both in urban and rural areas in all classes of schools systematically since 1886, when the suggestion was made to the Madras Government by the late Surgeon-General Bidie, C.I.E., I.M.S., then Sanitary Commissioner with the Government of Madras. Not only have succeeding sanitary Commissioners and their deputies conducted this work since that time, but all district medical and Sanitary officers have, after such inspections, forwarded reports to the local authorities with duplicates to the Sanitary Commissioner, thus enabling the latter to trace action, or its absence, by these authorities, and to urge attention accordingly. The forms supplied to officers demand a statement of the general health condition of pupils, a full sanitary survey of the school buildings and environment, the safety of water-supply and conservancy, the suitability of lighting in respect to eye preservation, ventilation, furniture in regard to attitudes, suitability of playground and hours of study and relaxation, duration and nature of gymnastics, protection from small-pox. Finally, the report form allows full scope for original suggestions. It by no means follows that either the local authorities or the Education Department have adopted off-hand all suggestions made, or that the Madras villages are crowded with children who look learned by reason of huge spectacles; but I can safely say many gross errors have been remedied, and a still greater number have been prevented, during the past 27 years—as a result of Surgeon-General Bidie's foresight.

I am, Sir, yours faithfully,

W. G. KING,
Colonel, I.M.S. (ret.).

Hatch End, August 18th, 1913.

## THE NATIONAL INSURANCE ACT.

*To the Editor of* THE LANCET.

SIR,—A welcome indication that medical men are beginning to recover from panic and to take a saner view of the operations of the National Insurance Act is furnished by the letter of Dr. B. Hall in THE LANCET of August 9th. I can endorse every word of it. Those who have joined the panel without having done any contract work in the past may possibly find difficulties, but for those of us whose work has included contract attendance on the employed through the medium of Friendly Societies or private clubs the change is all for the better. Dr. Hall truly says: "There is no dissatisfaction in this section of general practitioners," and puts the matter in a nutshell when he adds that "the *clientèle* of each is now exactly what it was before the Act, with the addition to it of scores or hundreds who were clients of no man before"; and the payment is regular and just double what it used to be. My own list consists practically of my old 4*s*. a head club patients, with the addition of a few score servants, shop assistants, and factory girls, hardly one of whom could have been regarded as a satisfactory paying patient in the past. The full record of attendances that I have kept shows, so far, that the work, item for item, is well paid for.

The advantage of medical attendance to the newly insured, those who previously, as Dr. Hall points out, either did without any treatment or took their ailments to the chemist or patent medicine vendor, is already making itself manifest, and the resulting public benefit must assuredly be very great.

Every panel doctor must, I hope, be curing many a case of neglected anæmia, dyspepsia, &c., among this class of patient, and our dental colleague in this small town is almost daily at the cottage hospital, clearing mouths of carious teeth and decayed stumps. Year by year these benefits must increase, and it seems to me to be a great work in which each one of us may "faithfully and cheerfully" take his part. I am, Sir, yours faithfully,

H. CAMERON KIDD.

Bromsgrove, Worcs., August 12th, 1913.

## CHRONIC INFLAMMATORY DISEASES OF THE APPENDAGES.

*To the Editor of* THE LANCET.

SIR,—I notice in THE LANCET of August 16th, on p. 483, an account of a paper read at the International Congress of Medicine by Professor Beuttner, of Geneva, in which he describes a method of dealing with "chronic inflammatory diseases of the appendages where it was possible to preserve one ovary" by excision of the tubes, one ovary, and a wedge-shaped piece of the fundus uteri. I have independently practised exactly this same procedure for some time as a routine measure in suitable cases, and I

have at the present moment four patients recently operated upon under my care.

I was not aware that the paper was to be read, and unfortunately was unable to be present at the sectional meeting, so I take this opportunity of bearing testimony to the great merits of this method of dealing with serious infections of the appendages in young women. As I have described in detail and figured the operation, as performed by me, for the forthcoming edition of "Burghard's Operative Surgery," I will not now give the obvious arguments in favour of it.

I am, Sir, yours faithfully,

Liverpool, August 18th, 1913. W. BLAIR BELL.

# Medical News.

ROYAL COLLEGES OF PHYSICIANS OF LONDON AND SURGEONS OF ENGLAND.—At a meeting of Comitia of the Royal College of Physicians of London and of the Council of the Royal College of Surgeons of England on July 31st diplomas of L.R.C.P. and M.R.C.S. were respectively conferred upon 86 candidates who have passed the Final Examination in Medicine, Surgery, and Midwifery of the Conjoint Board and have complied with the by-laws. The following is a list of the successful candidates.:—

George William Macbeath Andrew, B.A. Cantab., Cambridge University and Guy's Hospital; John Vere Orlebar Andrew, London Hospital; Basil William Armstrong, St. Mary's Hospital; Kathleen Jane Armstrong, Royal Free Hospital; Stephen Leonard Baker, London Hospital; Francis Balkwill, Manchester University; John Rawlings Barrow-Clough, Guy's Hospital; Margaret Mary Basden, Royal Free Hospital; Edgar James Boyd, B.A. Cantab., Cambridge University and St. Thomas's Hospital; Edward Albert Brocic, St. Bartholomew's Hospital; Arthur Edward Brown, B.A. Cantab., Cambridge University and University College Hospital; Winifred Finnimore Buckley, Royal Free Hospital; Charles Frank Burton, Eanis Ratcliff Chambers, and Nai Cheune, London Hospital; William Hunter Watson Cheyne, B.A. Cantab., Cambridge University and King's College Hospital; Irene Nancy Clough, Royal Free Hospital; Donald Murray Connan, Westminster Hospital; Herbert William Cooke, University College Hospital and Bristol University; Rolf Cressy, Guy's Hospital; Harry Edmund Creswell, B.A. Cantab., Cambridge University and University College Hospital; Herbert Leslie Cronk, B.A. Cantab., Cambridge University and St. Bartholomew's Hospital; Jules Maurice Curé, St. Bartholomew's Hospital; Manindranath Das, M.B. Calcutta, Calcutta University and London Hospital; Richard William Davies and Sidney Barron Depree, St. Mary's Hospital; David John Evans, M.B., Ch.B. Birm., Birmingham University; Henry William Evans, Guy's Hospital; Hubert Gibson, Liverpool University; Alfred Leslie Pearce Gould, B.A. Oxon., Oxford University and University College Hospital; Charles Hamilton Gould, Guy's Hospital; Malcolm Gross, Westminster Hospital; Edward Charles Hanna, M.B. Tor., Toronto University, Middlesex and University College Hospitals; Alexander Murchison Humphry, Cambridge University and St. Bartholomew's Hospital; Arthur Ernest Williams Idris, University College Hospital; George Dearden Jameson, B.A. Cantab., Cambridge University and St. Bartholomew's Hospital; Richard Orthin Hilton Jones, Guy's Hospital; John Wallace Kemp, Guy's Hospital; Geoffrey Langdon Keynes, M.A. Cantab., Cambridge University and St. Bartholomew's Hospital; Reginald Hutchinson Lucas, Guy's Hospital; Jessie McDonald, M.B. Tor., Toronto University; Margaret Josephine McEnery, Royal Free Hospital; William John McKay, B.A., M.D., C.M. Manitoba, Manitoba University and University College Hospital; Douglas Duncan Malpas, Middlesex Hospital; Reginald Victor Martin, L.M.S.S.A., St. Mary's Hospital; Cyril Frederick Mayne, B.A. Cantab., Cambridge University and St. George's Hospital; James Dennis Mercer, Manchester University; Alan Vivian Moberly, Guy's Hospital; William Frank Morgan, London Hospital; Francis Henry Mosse, M.A. Oxon., Oxford University and King's College Hospital; Gerald Thomas Mullally, Guy's Hospital; Way Ling New, Cambridge University and London Hospital; Hugh James Orr-Ewing, Bristol University; Dennis Salmon Page, B.A. Cantab., Cambridge University and University College Hospital; Arthur Edward Panter, B.A. Cantab., Cambridge University and King's College Hospital; Matthew Wallace Paterson, Manchester University; Percy Edward Hughes Patey, Guy's Hospital and Dublin University; Vishwanath Damodar Phatak, Bombay University and Middlesex Hospital; Edward Phillips, M.B., B.S. Durh., London Hospital; George Stanley Phillips, University College, Cardiff, and Charing Cross Hospital; *Dennison Veitch Pickering, Cambridge University and Guy's Hospital; John Walter Pigeon, B.A. Cantab., Cambridge University and St. Bartholomew's Hospital; Frank Pearce Pocock, King's College and Westminster Hospital; Richard Frith Quinton, London Hospital; Koty Venkata Ramana Rao, Madras University and Charing Cross Hospital; Martin Owen Raven, B.A. Oxon., Oxford University and St. Mary's Hospital; Hugh Augustine Richards, B.A. Cantab., Cambridge University and King's College Hospital; Henry Charles Rigg, Charing Cross Hospital; Francis Charles Robbs, St. Mary's Hospital; Evelyn Dennis Scott and Arthur Leonard Shearwood, Guy's Hospital; Lewis Rudall Shore, B.A. Cantab., Cambridge University and St. Bartholomew's Hospital; John Smith Sloper, St. Thomas's Hospital; Wilfred Scovil Soden, B.A. Cantab., and Douglas Leigh Spence, B.A. Cantab., Cambridge University and St. Bartholomew's Hospital; Mildred Blanche Stogdon, Royal Free Hospital; Archibald William Taves, M.D. Columbia, Columbia University; Eric Stuart Taylor, B.A. Cantab., Cambridge University and Guy's Hospital; Arthur Tilbury, Guy's Hospital; James Leonard Octavius Tilley, L.D.S. Eng., Charing Cross and Middlesex Hospital; Thomas Burdock Valle, St. Bartholomew's Hospital; George O'Neill Waddington, London Hospital; Thomas Warrington, B.A. Cantab., Cambridge University and University College Hospital; John Richard Menzies Whigham, M.B., B.S. Lond., St. Mary's Hospital; William Cuthbert Whitworth, Guy's Hospital; and Harry Addison Williams, M.B. Tor., Toronto University and London Hospital.

* Diploma of M.R.C.S. conferred on July 10th, 1913.

Diplomas in Public Health were granted conjointly by each College to the undermentioned 29 candidates:—

Ewald Mount Balthasar, L.R.C.P., M.R.C.S., St. Mary's Hospital; Arthur Francis Bell, M.B., B.S. Melb., Melbourne University and St. George's Hospital; William Bethune, M.B., C.M. Edin., Edinburgh University and University College; Herbert Stuart Blackmore, L.R.C.P., M.R.C.S., University College and Royal Army Medical College; William Harold Butler, L.R.C.P., M.R.C.S., University College; James Anthony Delmege, L.R.C.P., M.R.C.S., Guy's Hospital and University College; Hari Shankar Dube, L.M.S. Punjab, Punjab University and University College; Walter Robert Dunstan, M.B. Lond., L.R.C.P., M.R.C.S., London Hospital; Andrew Leslie Dykes, M.D. Edin., Edinburgh University and University College; Robert Philip Garrow, M.D. Aberd., Aberdeen University and King's College; Arthur Gaskell, F.R.C.S. Eng., L.R.C.P., M.R.C.S., University College; Samuel Ernest Gill, M.D. Lond., L.R.C.P., M.R.C.S., St. Bartholomew's Hospital and University College, Nottingham; Christina Love Goode, M.B., B.S. Melb., Melbourne University and University College; Claud Sebastian van Renen Harwood, M.B., B.S. Lond., L.R.C.P., M.R.C.S., Westminster Hospital and Royal Institute of Public Health; Abd el Aziz Ismail, L.R.C.P., M.R.C.S., Cairo and King's College; Robert George Johnson, M.B. Lond., L.R.C.P., M.R.C.S., Bristol University and University College; Percival Maurice Keane, L.R.C.P. & S. Irel., Belfast and University College; Gerard Ainslie Kempthorne (Captain, R.A.M.C.), L.R.C.P., M.R.C.S., St. Thomas's Hospital and Royal Army Medical College; Norman Maclean Leys, M.B., Ch.B. Glasg., Glasgow University and Westminster Hospital; Charles Herbert Lilley, M.B., Ch.B. St. And., St. Andrews University and University College; John Alfred Steele Phillips (Captain, I.M.S.), L.R.C.P. & S. Edin., L.F.P. & S. Glasg., Edinburgh University and Royal Army Medical College; Edward Selby Phipson (Captain, I.M.S.), M.B., B.S. Lond., L.R.C.P., M.R.C.S., Birmingham University, Royal Army Medical College, and University College; Thomas William Watkin Powell, L.R.C.P., M.R.C.S., University College; Laura Williams Pugh, M.B., Ch.B. Edin., Edinburgh School of Medicine for Women and University College; Balwant Rai, L.M.S. Punjab, Punjab University and University College; Shobha Ram, M.B. Lahore, Punjab University and University College; Hugh Godwin Sherren (Captain, R.A.M.C.), L.R.C.P., M.R.C.S., London Hospital and Royal Army Medical College; George Henderson Stevenson, M.B., Ch.B. Edin., Edinburgh University; and John Taylor (Captain, I.M.S.), M.D. Glasg., Glasgow University and University College.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—The Licence in Dental Surgery was conferred upon Mr. Clementson Glover, of Guy's Hospital.

FOREIGN UNIVERSITY INTELLIGENCE.—*Marburg:* Dr. Fritz Loening has been recognised as *privat-docent* of Medicine and Dr. Georg Magnus as *privat-docent* of Surgery and Orthopædics.—*Marseilles:* Dr. Aubaret, of Bordeaux, has been appointed to the chair of Clinical Ophthalmology, in succession to the late Dr. Guende.—*Mobile* (*University of Alabama School of Medicine*): Dr. Thomas P. Sprunt has been appointed to the chair of Pathological Anatomy.—*Munich:* Dr. L. von Zumbusch has been offered the Extraordinary Professorship of Dermatology and Syphilis held by the late Dr. Kopp. Dr. Rudolf Allers has been recognised as *privat-docent* of Psychiatry and Dr. Welhelm von Stauffenberg as *privat-docent* of Medicine. Dr. W. Heuck, of Bonn, has been recognised as *privat-docent* of Dermatology and Syphiligraphy.—*New York* (*Columbia University College of Physicians and Surgeons*): Dr. Hans Zinsser, professor in the Leland Stanford University, San Francisco, has been appointed to the chair of Bacteriology, in succession to the late Dr. Hiss.—*Rennes:* Dr. Lautier has been appointed Professor of Anatomy, in succession to Dr. Lhuissier. Dr. Millardet has been appointed Professor of Hygiene and Forensic Medicine, in succession to Dr. Le Damany.—*Strasburg:* Dr. Nicolai Guleke, *privat-docent* of surgery, has been granted the title of Professor.—*Sydney:* Dr. E. H. Molesworth has been appointed Lecturer in Dermatology.—*Toulouse:* Dr. A. Rémond, clinical professor of mental diseases, has been appointed to the chair of Clinical Medicine, in succession to Dr. C. Caubet. Dr. Gorse has been appointed Professeur Agrégé of General Surgery.—*Tübingen:* Dr. Karl von Korff, *privat-docent* of anatomy, has been granted the title of Extraordinary Professor.—*Vienna:* Dr. Richard Kretz, professor of pathological anatomy in Würzburg, has returned to Vienna as *privat-docent* of his subject.

WE regret to learn of the death, at the age of 73, of Mr. Walter Whitehead, late professor of surgery in the Victoria University of Manchester. The event occurred at Colwyn Bay on Tuesday last.

DONATIONS AND BEQUESTS.—The late Mrs. A. T. O'Callaghan, of Cheltenham, has bequeathed £3000 to the Warneford Hospital, Leamington (in memory of her three sisters), £2000 to the Cheltenham General Hospital, and £300 to the Victoria Home for District Nurses at Cheltenham.

ROYAL DENTAL HOSPITAL OF LONDON SCHOOL OF DENTAL SURGERY.—A series of post-graduate lectures will be given during the months of October and November, 1913, on Tuesdays, at 6 P.M., as follows:—Oct. 21st, The Theoretical Basis of Vaccine Therapy, by Dr. W. J. Penfold; Oct. 28th, Dental Caries from a Clinical Standpoint, by Mr. J. G. Turner; Nov. 4th, The Lessons of the Routine Administration of Anæsthetics in Dental Surgery, by Dr. Dudley Buxton; Nov. 11th, The Mechanical Treatment of Difficult Dentures, by Mr. G. H. Berwick; Nov. 18th, The Third Molars, by Mr. W. H. Dolamore; Nov. 25th, Further Notes on Periodontal Disease, by Mr. J. F. Colyer. The fee for the course is £2 2*s*., but past and present students of the hospital and internal students of the University of London will be admitted free.

LIVERPOOL POLICE SURGEONS.—The Watch Committee of the city of Liverpool recently invited applications for the position of police surgeon. The salary was to commence at £80 per annum, increasing after three years to £100 per annum. The duties were to attend the policemen in the district and prisoners at the bridewells when required, for which extra fees would be paid. Formerly a surgeon was attached to a police division and was paid £80 per annum. It has been found better to have all the men attended in districts, as men in a division lived scattered over large areas. The local division of the British Medical Association having objected to the terms offered, and made a representation of their views to the Watch Committee, a resolution was passed by that body at the beginning of the week raising the salary to £100 at commencement, and granting fees of 21*s*. for ambulance lectures, 3*s*. for vaccinations, and 2*s*. 6*d*. for the examinations of candidates for the constabulary force.

DEATHS OF EMINENT FOREIGN MEDICAL MEN.—The deaths of the following eminent foreign medical men are announced:—Dr. Sigmundt, Medical Councillor, of Würtemberg.—Dr. Edwin E. Goldmann, honorary professor of surgery in the University of Freiburg, whose researches in pathological anatomy and microscopical staining methods have earned him a world-wide reputation. He was 49 years of age and was looked upon as an Englishman, having been born in Cape Colony and having married an English lady, daughter of the late Mr. Bosworth Smith.—Dr. Otto Hjelt, formerly professor of pathological anatomy in the University of Helsingfors.—Dr. Horace F. Jayne, formerly professor of anatomy in the University of Pennsylvania, Philadelphia.—Dr. Ellet O. Sisson, formerly professor of histology in the Keokuk Medical College.—Dr. Fritz Albert Andersen, of Orskog, Norway, formerly of Madison, South Dakota.—Dr. Jorgen Henrik Olsen, formerly district medical officer of Ytre Narnalden, Norway, aged 69.

WORTHING HOSPITAL.—The operation of the National Insurance Act has had a very marked effect on the amounts usually contributed to the local hospital at Worthing. Not only have the sums collected in boxes and the amounts subscribed by employees of various firms shown a falling off, but the annual subscriptions and donations have produced a smaller amount than usual. The annual report of the committee of management shows a deficit of £420, and in addition it has been necessary to expend out of capital a sum of £564 10*s*. This has been partly due to a deficit of £378 6*s*. 10*d*. with which the year began, and partly to the fact that certain extraordinary expenditure, amounting to £313 15*s*. 7*d*., has been defrayed out of income instead of being charged to capital account. A satisfactory feature of the report, however, is that the cost of erecting the new out-patients department has been entirely liquidated, thanks to an anonymous gift of £1000 and a supplementary appeal. The hospital had 310 in-patients and 2681 out-patients during the year, as well as 558 casualties and 99 urgency and accident cases.

EMIL CHR. HANSEN'S FUND.—According to the will of the late Professor Emil Chr. Hansen and his wife a fund bearing his name has been established. At intervals of two or three years, beginning in 1914, a gold medal bearing his effigy and accompanied by a sum of at least 2000 kroner is to be awarded on May 8th to the author of a meritorious publication on some microbiological subject, and recently published in Denmark or elsewhere. In 1914 the medal will be awarded to a worker in the field of medical microbiology. Further particulars will be given by the president of the board of trustees, Professor Dr. S. P. L. Sorensen, the Chemical Department of Carlsberg Laboratory, Copenhagen.

THE THIRD INTERNATIONAL CONGRESS FOR DISEASES OF OCCUPATION.—This congress will be held in Vienna in September, 1914. It will be strictly scientific, and the first place will be given to experts in the respective subjects under discussion, but the collaboration of all who are in any way interested therein is also desired. The subjects for discussion will be: 1. The Physiology and Pathology of Fatigue, especially with regard to professional work, overwork, and nightwork. 2. Work in Hot and Damp Air. 3. Anthrax. 4. Pneumoconiosis. 5. Electrical Industrial Injuries. 6. Industrial Poisoning, especially by anilin, mercury, and lead. 7. Industrial Injuries to Hearing. 8. Independent communications. All persons and corporations interested in the study of occupational diseases are invited to become ordinary members of the congress. The subscription is £1. The presidents of the congress are Dr. Francis von Haberler, councillor of the ministry, and Dr. A. Schattenfroh, professor of hygiene at the University of Vienna. The general secretary is Dr. Ludwig Teleky, Vienna IX., 23, Türkenstrasse, from whom more detailed information can be obtained on application. Among those from this country who have consented to take part are Sir Thomas Oliver, Sir Arthur Whitelegge, Dr. T. M. Legge, Mr. H. W. Armit, the Association of Certifying Factory Surgeons, and the Medico-Legal Society.

KING'S COLLEGE HOSPITAL MEDICAL SCHOOL (UNIVERSITY OF LONDON).—In view of the increased amount of instruction which is to be given in the new hospital at Denmark Hill, commencing on Oct. 1st next, the following additional appointments have been made to the medical staff of that school:—Dr. Norman Dalton, lecturer on medicine. Dr. F. W. Tunnicliffe, Dr. J. Charlton Briscoe, and Dr. H. W. Wiltshire, lecturers on practical medicine. Dr. F. W. Tunnicliffe, lecturer on therapeutics and applied pharmacology. Mr. G. Lenthal Cheatle, joint lecturer on surgery. Mr. T. Percy Legg, lecturer on operative surgery. Dr. Hugh Playfair, lecturer on gynæcology. Mr. H. Willoughby Lyle, lecturer on practical ophthalmology. Mr. G. J. Jenkins, lecturer on practical otology. Dr. J. F. W. Silk, lecturer and instructor in anæsthetics. Dr. G. B. Flux, instructor in anæsthetics. Dr. P. B. Ridge, lecturer on morbid anatomy and histology and curator of the museum. Dr. Robert Knox, teacher of radiography. The following additional appointments have been made to the staff of King's College Hospital:—Dr. Hugh Playfair, promoted to the position of obstetric physician; Sir Ronald Ross to be physician for tropical diseases; Dr. Robert Knox to be radiographer; Dr. R. W. A. Salmond to be assistant radiographer; Dr. E. B. Clayton to be medical officer in charge of the department of massage and electro-therapeutics; Mr. G. W. Shore to be Sambrooke medical registrar; and Mr. H. P. Ashe to be resident casualty officer.

THE BIENNIAL CONFERENCE OF THE NATIONAL ASSOCIATION OF TEACHERS OF THE DEAF.—The National Association of Teachers of the Deaf held their biennial conference at Glasgow from July 28th to 31st, under the chairmanship of Dr. W. H. Addison. It was chiefly remarkable for the attention paid to the young deaf child; indeed, it will be known in future as the "Conference of the Young Child." On July 29th the following motion was put forward, proposed by Mr. Sibley Haycock, of London, and seconded by Mr. A. J. Story, of Stoke-on-Trent: "That this conference is of opinion that the compulsory commencing school age of deaf children should be brought into line with that of normal children and of blind children; that, provided suitable arrangements are made, deaf children should

be permitted to attend school from the age of 3 years, and that grants should be payable in respect of such children attending school." A reactionary amendment, proposed by Mr. J. Welsh, of Glasgow, and Mrs. W. H. Addison, was negatived, and the original motion carried by between 60 and 70 votes to 13. The matter was alluded to further in the discussion, under the chairmanship of Dr. Kerr Love, of a paper by Mr. Macleod Yearsley on the Coöperation of the Teacher and the Doctor, when those who opposed the early education of the deaf child were condemned as comparable to those who, by pseudo-scientific chatter and sham sentiment, fought against Darwin, Lister, and the introduction of chloroform. The passing of this resolution marks an important epoch in deaf education, for it recognises the great principle of giving to the young deaf child that physiolgical education which, by reason of his loss of hearing, he cannot obtain otherwise. Early education makes for better articulation, better language, and gives some chance of that automatism of speech which the hearing child so rapidly acquires.

MIDDLESEX HOSPITAL MEDICAL SCHOOL.—The following scholarships, prizes, and certificates have been awarded:—Lyell medal and scholarships and Hetley clinical prize, A. O. Gray; John Murray medal and scholarship, F. W. Browne; Leopold Hudson prize, H. A. Lucas; New Zealand Scholarship, T. Julian; second years' exhibition, D. W. J. Andrews. Medicine prize, F. E. Feilden. Surgery prize, F. E. Feilden; certificate—T. C. Kidner. Practical medicine prize, F. E. Feilden; certificates—S. W. M. Jones, B. M. Mitra, and B. H. Singh. Practical surgery prize, C. P. Sells; certificates—B. M. Mitra and F. E. Feilden. Practical Midwifery prize, O. C. Link. Pathology prize, T. C. Kidner; certificate—B. H. Singh. Psychiatry prize, H. C. Samuel; certificate—C. J. B. Way. Pharmacology prize, E. H. Lake; certificate—F. C. Mason. Anatomy prize, D. W. J. Andrews; certificates—W. H. Dye, H. De Morgan, D. C. Ogilvie, and W. L. Thomas. Physiology prize, D. W. J. Andrews; certificate—D. C. Ogilvie. Practical anatomy prize, D. C. Ogilvie; certificates—J. Fox Russell and C. J. L. Wells. Histology prize, E. H. Lake; certificates—F. C. Mason and W. B. Gabriel. Embryology prize, W. T. Warwick; certificate—F. C. Mason. Practical pharmacy prize, L. G. Lunnon; certificates—H. C. Samuel and R. F. S. Mason. Biology prize, G. Howorth; certificates—C. Shelton, L. G. Lunnon, and A. K. Ince Jones. Organic chemistry prize, F. C. Mason; certificates—E. H. Lake, A. Selby Green, and W. B. Gabriel. Inorganic chemistry prize, M. B. Tench; certificates—A. I. Cox and J. J. Chiappa. Physics prize, A. I. Cox; certificates—M. B. Tench and A. G. Hewer.

# Parliamentary Intelligence.

## NOTES ON CURRENT TOPICS.

*National Insurance Act (1911) Amendment Bill.*

PARLIAMENT was formally prorogued on August 15th, and is not to meet again till January or February of next year. Among the measures which received the Royal Assent was the National Insurance Act (1911) Amendment Bill. When the Bill reached the House of Lords, having already passed the Commons, it was one of a large number of measures for the discussion of which the Second Chamber had only a few days of the session left. Several peers complained that a thorough investigation of the merits of the Amending Bill was impossible in the circumstances.

Viscount MIDLETON emphasised this complaint, and pointed out that a revision by the Second Chamber of the original National Insurance Act had in like manner been made impossible because no adequate time was available for so huge a task. Nearly all the provisions in this Amending Bill, he added, had been pressed on the Government when the original measure was under discussion as difficulties which some day would have to be faced.

Several amendments, mostly of a drafting character, were introduced by the Lords into the Bill, and on Thursday, August 14th, it returned to the Commons, where the changes were approved. All that then remained was for the Bill to receive the Royal Assent, and this was signified on Friday, the 15th.

At the same time the following further measures became law: The Mental Deficiency and Lunacy (Scotland) Bill, the Public Health (Prevention and Treatment of Disease) Bill, and the Highlands and Islands (Medical Service) Bill.

## HOUSE OF COMMONS.

### WEDNESDAY, AUGUST 13TH.

*The Medical Service of Jamaica.*

Dr. CHAPPLE asked the Secretary of State for the Colonies whether he would call for a report from the Governor of Jamaica on the system of medical service on the island, with a view to its reorganisation in order to meet the pressing needs of the population.—Mr. L. HARCOURT replied: The information at my disposal indicates that the medical service of Jamaica is as good as financial exigencies permit, and that every attention is being paid to its improvement. In these circumstances I should not feel justified in calling for a detailed report, but I will invite the Governor to say whether he considers that there are any serious grounds for dissatisfaction with the present system.

Dr. CHAPPLE asked the Secretary of State for the Colonies, further, whether he would take steps to provide that increased facilities were given to ordinary medical practitioners in the island of Jamaica for visiting the hospitals and for rendering such service as would enable them more effectively to cope with the increasing mass of contagious and other diseases.—Mr. HARCOURT replied: I will ask the Governor to consider whether increased facilities are required.

*Nomadic Workers and Medical Benefit.*

Sir JOHN JACKSON asked the Chancellor of the Exchequer whether he was aware that the provisions of the National Insurance Act placed difficulties in the way of labourers engaged in the construction of public works; that these men, in pursuance of their employment, went from one job to another, and as a consequence few were able to obtain the sick and medical benefits for which they were compelled to subscribe; whether he would consider the advisability of an alteration either in the Act itself or in the Regulations to meet the difficulty mentioned, and would he say what a man was to do when the nearest panel doctor was four or five miles away from the work under construction.—Mr. MASTERMAN (for the Chancellor) replied: Arrangements are being made whereby insured persons who are frequently moving from place to place in the course of their employment will be enabled to obtain medical benefit wherever they may happen to be in Great Britain.

Sir C. KINLOCH-COOKE: Is the right honourable gentleman aware that these men are not able to obtain the benefit?—Mr. MASTERMAN: I have said that arrangements are being made whereby they will be able to get it. They can obtain it now if they give notice, but we are trying to get rid of the necessity for giving notice.

Sir C. KINLOCH-COOKE: How can they get it if the panel doctor is four or five miles away?—Mr. MASTERMAN: They will get medical attendance from the nearest doctor available.

*The Payment of Panel Doctors.*

Mr. FRED HALL asked the Secretary to the Treasury if, in the case of the county of London, panel doctors had been paid in respect of medical benefit under the National Insurance Act at the rate of 1*s.* 6*d.* per insured person for the second quarter of the present year, while they were paid at the rate of 1*s.* 9*d.* for the first quarter; if, further, no payment had been made in regard to persons added to the doctors' lists in the second quarter; if all payments due to medical practitioners for the first half-year had now been made as regards London; and, if so, he would give the total amounts paid to panel doctors for the first and second quarters respectively, and the total numbers of insured accepted persons for the same periods in respect of which such sums were paid.—Mr. MASTERMAN, in a written reply, stated: The honourable Member is mistaken in supposing that a payment of a previously ascertainable amount is due at the end of each quarter to each doctor on the panel. As I have frequently pointed out, the precise amount actually due to any particular doctor can only be finally determined at the end of the year. The Regulations, however, provide that the Insurance Committee shall make payments in advance at the end of each quarter of such amounts as may be agreed for this purpose, and London doctors have accordingly received advanced payments at the rate of 1*s.* 9*d.* per insured person on their list for the first quarter, and 1*s.* 6*d.* for the second quarter. Payments were made on March 10th, 9*d.*; April 22nd, 1*s.*; June 10th, 9*d.*; July 15th, 9*d.* To facilitate this latter payment on the last day of the quarter and to avoid delay the amount paid was based on the figures for the first quarter. A further payment will be made on August 23rd, based on the figures for the second quarter, and any balance found to be payable will be added thereto.

Mr. BUTCHER asked the Chancellor of the Exchequer whether, in view of the fact that a sum of 7*s.* per insured person per annum was paid to doctors on the panel for medical treatment, exclusive of drugs and medicine, he would state the reason why a sum of only 4*s.* per insured person per annum was allowed to Friendly Societies' medical associations for providing medical treatment, including drugs and medicines.—Mr. MASTERMAN replied: The honourable Member has been misinformed. When the expenditure of an approved institution in respect of their insured members upon medical treatment (including the provision of medicines and appliances) and all reasonable establishment charges amounts to 9*s.* per head, the amount of the contribution to be made to the institution by the Insurance Committee will be a sum equal to 9*s.* per insured member of the institution.

*Salaries of Prison Doctors.*

Mr. CHANCELLOR asked the Secretary of State for the Home Department whether the salaries of the prison doctor's at Holloway had recently been raised; and, if so, whether this was in consequence of duties involved in the treatment of suffragette prisoners.—Mr. MCKENNA replied: The scale of pay of the deputy medical officers at Holloway Prison has, in common with those of all other whole-time medical officers and deputy medical officers throughout the prison service, lately been improved, but this improvement was on general grounds, and had no connexion with the treatment of suffragette prisoners.

### THURSDAY, AUGUST 14TH.

*Medical Inspection of Schools in Ireland.*

Mr. O'DONNELL asked the Chief Secretary for Ireland to state what steps had been taken to frame a scheme for the medical inspection and treatment of children in Irish national schools; and whether schemes of this kind had been for years in operation in England and Scotland.—Mr. A. BIRRELL replied: The Commissioners of National Education have invited the managers of the National schools to submit schemes for

the dental inspection and treatment of the pupils, and approved schemes are in operation in a considerable number of schools. The Commissioners have not up to the present adopted any scheme for general medical inspection and treatment. I understand that such schemes have been in operation in England and Scotland for some time.

*The Poor-law Medical Service.*

Mr. GINNELL asked the President of the Local Government Board (1) to state the average annual amount of the grants paid by the Treasury towards the cost of the Poor-law medical service in England and Wales in the ten years preceding the operation of the National Insurance Act, and, if those grants continued in addition to the National Insurance Act, to state the present annual amount of them for England and Wales; and (2) the average annual amount paid by the Treasury towards the cost of the Poor-law medical service in England and Wales before the National Insurance Act came into operation and since, respectively, and the grounds upon which the additional 2s. 6d. per insured person, since voted and now being paid to doctors in Great Britain, was not also being paid towards the better working of the Act in Ireland.—Mr. MASTERMAN (Financial Secretary to the Treasury) replied: Such Exchequer assistance as is given in England and Wales towards the cost of the Poor-law medical assistance forms part of the general subventions for Poor-law services, and cannot be specifically earmarked. As regards the latter part of the second question I cannot add anything to my previous answers.

*The Highlands and Islands Medical Service.*

Mr. JAMES HOGGE asked the Secretary for Scotland whether he could communicate to the House the names of the Board who are to administer the Highlands and Islands (Medical Service) Act.—Mr. MCKINNON WOOD replied that the names were as follows: Sir John Dewar, chairman; Sir Donald MacAlister, Principal of the University of Glasgow; Lady Susan Gilmour, honorary secretary of the Queen Victoria Jubilee Institute for Nurses; Dr. McVail, of the Scottish Insurance Commission; Dr. Leslie Mackenzie, of the Local Government Board; Dr. John Macpherson, of the Lunacy Board; and Mr. J. L. Robertson, chief inspector under the Scottish Education Department.

*Insurance Medical Benefit in Ireland.*

Mr. JOHN REDMOND asked the Chancellor of the Exchequer whether he could make any statement as to the further financial assistance to be placed at the disposal of the National Health Insurance Commissioners (Ireland) for the purpose of enabling medical certificates to be obtained under the National Insurance Act in Ireland.—Mr. LLOYD GEORGE, in a written reply, said: I have been in communication with my honourable friend and his colleagues and also wi h the Irish Insurance Commissioners on this subject, and I am satisfied that the grant of £50,000 at present available for expenses due to the absence of medical benefit in Ireland is insufficient to provide for adequate arrangements for certification. The Insurance Commissioners are engaged in negotiation with the medical profession and with the Approved Societies, and if a scheme can be devised which is satisfactory to the parties concerned, I shall be prepared to ask Parliament to increase the grant by such amount as may be necessary, subject to the limit of 2s. 6d. per insured person which has been imposed in Great Britain not being exceeded in Ireland.

## BOOKS, ETC., RECEIVED.

ADLARD AND SON, Bartholomew Close, London, E.C.

On Cases of Accident to Shipping and on Railways due to Defects of Sight. By E. Nettleship, F.R.C.S., F.R.S., Consulting Ophthalmic Surgeon to St. Thomas's Hospital. Price 2s.

ALCAN, FÉLIX, Paris.

L'Action Directe sur les Centres Nerveux. Centrothérapie. Par le Dr. Pierre Bonnier. Price Fr.5.

ANGUS AND ROBERTSON, LIMITED, Sydney. OXFORD UNIVERSITY PRESS, Amen Corner, London, E.C.

Australian Institute of Tropical Medicine. Report for the Year 1911. By Anton Breinl, M.D., Director of the Institute. In Collaboration with Frank H. Taylor, F.E.S., and T. Harvey Johnston, M.A., D.Sc., F.L.S., Lecturer in Biology, University, Brisbane. Price not stated.

BAILLIÈRE, TINDALL, AND COX, London.

Organic and Functional Nervous Diseases. A Text-book of Neurology. By M. Allen Starr, M.D., Ph.D., LL.D., Sc.D. Fourth edition, thoroughly revised. Price 25s. net.

A Text-book of Biology. For Students in Medical, Technical, and General Courses. By William Martin Smallwood, Ph.D. Harvard. Price 10s. 6d. net.

CHURCHILL, J. AND A., London.

The Microtomist's Vade-mecum. A Handbook of the Methods of Microscopic Anatomy. By Arthur Bolles Lee. Seventh edition. Price 15s. net.

COBLENTZ, OSCAR, Berlin, W.

Ueber die Behandlung der Kinderkrankheiten. H. Neumanns Briefe an einen jungen Arzt. Sechste gänzlich veränderte und erweiterte Auflage. Bearbeitet von weil. Professor Dr. H. Neumann, Berlin, und Dr. E. Oberwarth, Berlin. Price M.12.

DULAU AND CO., LIMITED, 37, Soho-square, London, W.

Department of Applied Statistics, University College, University of London. Drapers' Company Research Memoirs. Biometric Series VIII. A Monograph on Albinism in Man. By Karl Pearson, F.R.S., E. Nettleship, F.R.C.S., F.R.S., and C. H. Usher, M.B., B.C. Camb. Text, Part II., and Atlas, Part II. Price 30s. net.

EUGENICS RECORD OFFICE, Cold Spring Harbor, Long Island, N.Y.

Eugenics Record Office. Bulletin No. 9. State Laws Limiting Marriage Selection, Examined in the Light of Eugenics. By Charles B. Davenport, Carnegie Institute of Washington, Department of Experimental Evolution. Price 40 cents.

FISCHER, GUSTAV, Jena.

Arbeiten aus dem Pathologischen Institut der Universität Helsingfors (Finland). Herausgegeben von Professor Dr. E. A. Homén. Neue Folge. Erster Band. Drittes und viertes Heft. Price M.12.

Handbuch der pathogenen Mikroorganismen. Herausgegeben von Dr. W. Kolle und Dr. A. von Wassermann. Zweite vermehrte Auflage. Lieferungen 45, 46, 47, 48—49, 50—51, 52—53—54. Price M.5 each.

Handbuch der Vergleichenden Physiologie. Herausgegeben von Hans Winterstein in Rostock. Fünfunddreissigste Lieferung. Band III. Physiologie des Energiewechsels, Physiologie des Formwechsels. Erste Hälfte. Seite 969-1132. Price M.5.

Die Morphologie der Missbildungen des Menschen und der Tiere. Herausgegeben von Dr. Ernst Schwalbe. III. Teil. Die Einzelmissbildungen. X. Lieferung. Anhang. 2. Kapitel. Gewebsmissbildungen. Von G. Herxheimer. Price M.15.

Arbeiten aus dem Königlichen Institut für Experimentelle Therapie zu Frankfurt a.M. Herausgegeben von Wirkl. Geh. Ober-Med.-Rat. Professor Dr. P. Ehrlich. Heft 5. (Aus der Prüfungstechnischen Abteilung.) Price M.2.

Klinische Beiträge zur Pathologie und Therapie der chirurgischen Zahnkrankheiten. Von Professor Dr. B. Mayrhofer, in Innsbruck. Price M.2.

Die Lehre von der Krebskrankheit von den ältesten Zeiten bis zur Gegenwart. Von Sanitätsrat Professor Dr. Jacob Wolff, prakt. Arzt in Berlin. III. Teil. Erste Abteilung. Statistik. Tier-und sogennanter Pflanzenkrebs. Price M.10.

FROWDE, HENRY, AND HODDER AND STOUGHTON, London.

Cancer of the Breast. An Experience of a Series of Operations and their Results. By Charles Barrett Lockwood, F.R.C.S. Eng. Price 10s 6d. net.

Surgical Experiences in South Africa, 1899-1900. Being Mainly a Clinical Study of the Nature and Effects of Injuries produced by Bullets of Small Calibre. By George Henry Makins, C.B., F.R.C.S. Second edition. Price 10s. 6d. net.

Dysenteries, their Differentiation and Treatment. By Leonard Rogers, M.D., F.R.C.P., B.S., F.R.C.S., C.I.E., I.M.S. Price 10s. 6d. net.

Manual of Bacteriology. By Robert Muir, M.A., M.D., Sc.D., F.R.S.; and James Ritchie, M.A., M.D., F.R.C.P. Ed. Sixth edition. Price 10s. 6d. net.

HIRZEL, S., Leipzig.

Handbuch der Hygiene. Herausgegeben von Professor Dr. M. Rubner, Geh. Medizinalrat, Berlin; Professor Dr. M. v. Gruber, Obermedizinalrat, München; und Professor Dr. M. Ficker, Berlin. III. Band. I. Abteilung. Die Infektionskrankheiten. Price, paper, M.27; bound, M.30.

Die physiologisch-biologische Richtung der modernen Chirurgie. Antrittsvorlesung gehalten am 11 Dezember, 1912, in der Aula der Universität Leipzig. Von Geh. Med.-Rat Professor Dr. E. Payr, Direktor der chirurgischen Universitäts-Klinik. Price M.1.60

KARGER, S., Berlin.

Hysterie. Zur Frage über die Entstehung hysterischer Symptome. Von Dr. J. M. Raimist, Leiter der Nerven-Abteilung des Jüdischen Hospitals in Odessa. Price M.3.50.

Die Augeneiterung der Neugeborenen (Aetiologie, Pathologie, Therapie, und Prophylaxe). Von Dr. C. A. Credé-Hörder, Frauenarzt in Berlin. Price M.5.

LIPPINCOTT (J. B.) COMPANY, London and Philadelphia.

International Clinics. Edited by Henry W. Cattell, A.M., M.D., Philadelphia, U.S.A., with Collaboration. Twenty-third series, 1913. Volumes I. and II. Price 35s. net per year (four volumes).

Mechanical Treatment of Abdominal Hernia. By William Burton DeGarmo, M.D. Price 6s. net.

Müller's Serodiagnostic Methods. Authorised Translation from the Third German Edition. By Ross C. Whitman, B.A., M.D. Price 6s. net.

MALOINE, A., Paris.

Études sur le Sérodiagnostic et le Traitement de la Syphilis. Stratégie et Tactique. Par le Dr. Leredde. Price Fr.10.

MASSON ET CIE, Paris.

Éléments d'Anatomie et de Physiologie Méticales. Publiés sous la Direction de MM. L. Landouzy et Léon Bernard. Par MM. Léon Bernard, Gougerot, Halbron, S.I. de Jong, Laederich, Lortat-Jacob, Salomon, Sézary, Vitry. Price Fr.20.

MILFORD, HUMPHREY, Oxford University Press, London, New York, Toronto, Melbourne, and Bombay. HENRY FROWDE, Oxford University Press, Amen Corner, London, E.C., on behalf of the Royal Society of Literature.

Syrian Anatomy, Pathology, and Therapeutics, or "The Book of Medicines." The Syriac Text, edited from a Rare Manuscript, with an English Translation, &c. By E. A. Wallis Budge, M.A., Litt.D., Keeper of the Egyptian and Assyrian Antiquities in the British Museum. Published under the Direction of the Royal Society of Literature of the United Kingdom. Volume I. Introduction. Syriac Text. Volume II. English Translation and Index. Price 42s. net.

NATIONAL ANTIVACCINATION LEAGUE, London.

Leicester: Sanitation *versus* Vaccination, its Vital Statistics Compared with those of Other Towns, the Army, Navy, Japan, and England and Wales. By J. T. Biggs, J.P. Price 6s., post free.

NATIONAL LEAGUE FOR PHYSICAL EDUCATION AND IMPROVEMENT, 4, Tavistock-square, London, W.C.

Infant Welfare Centres. The Work of Infant Consultations, Schools for Mothers, and Similar Institutions. By I. G. Gibbon, D.Sc. Price 6d. net; post free, 7d.

OLIVER AND BOYD, Edinburgh.

Reports from the Laboratory of the Royal College of Physicians, Edinburgh. Edited by George Lovell Gulland, M.D., and James Ritchie, M.D. Vol. XII. Price not stated.

HEBMAN, LIMITED, London.

A Course in Normal Histology. A Guide for Practical Instruction in Histology and Microscopic Anatomy. By Rudolf Krause, A.O., Professor of Anatomy at the University of Berlin. Translation from the German by Philipp J. R. Schmahl, M.D., New York. Part I. Price 5s. net.

ROCKEFELLER INSTITUTE FOR MEDICAL RESEARCH, Sixty-sixth Street and Avenue A, New York, U.S.A.

Studies from the Rockefeller Institute for Medical Research. Reprints. Volume XVII. Price not stated.

SANITARY PUBLISHING COMPANY, LIMITED, London.

The Food Inspector's Handbook. By Francis Vacher, Vice-President of the Society of Medical Officers of Health. Sixth edition. Price 7s. 6d. net.

SAUNDERS (W. B.), COMPANY, London and Philadelphia.

Reference Handbook of Gynecology for Nurses. By Catherine Macfarlane, M.D., Gynecologist to the Woman's Hospital of Philadelphia. Second edition, revised. Price 6s. net.

Diseases of the Eye. By G. E. de Schweinitz, A.M., M.D. Seventh edition, thoroughly revised. Price 21s. net.

Psychanalysis, its Theories and Practical Application. By A. A. Brill, Ph.B., M.D. Price 13s. net.

Diet Lists of the Presbyterian Hospital, New York City. Compiled, with Notes, by Herbert S. Carter, A.M., M.D. Price 5s. net.

SELL, CHARLES H., 168, Fleet-street, London, E.C.

Low's Handbook to the Charities of London. 1913. Price 1s.

SIMPKIN, MARSHALL, HAMILTON, KENT, AND CO., LIMITED, London. (For the "CANADA" NEWSPAPER CO., LIMITED, Kingsway House, London, W.C., and Confederation Life Building, Toronto.)

Canada To-day, 1913. (An Annual Reference Book on Canada, its Progress, Prosperity, and Opportunities. Price 2s. net.)

SMITH, ELDER, AND CO., 15, Waterloo-place, London.

How to Diagnose Small-pox. A Guide for General Practitioners, Post-Graduate Students, and Others. By W. McC. Wanklyn, B.A. Cantab., M.R.C.S., L.R.C.P., D.P.H., Assistant Medical Officer of the London County Council, and formerly Medical Superintendent of the River Ambulance Service (Small-pox) of the Metropolitan Asylums Board. Price 3s. 6d. net.

SPRINGER, JULIUS, Berlin.

Grundriss der Dermatologie. Von J. Darier, Médecin de l'Hôpital, Saint-Louis. Autorisierte Uebersetzung aus dem Französischen. Von Dr. phil. et med. Karl G. Zwick, aus Cincinnati, O., U.S. America. Mit Bemerkungen und Ergänzungen von Professor Dr. J. Jadassohn, Direktor der Dermatologischen Universitätsklinik in Bern. Price, paper, M 22; bound, M.24.50.

Die Erkrankungen der Blutdrüsen. Von Professor Dr. Wilhelm Falta, Wien. Price, paper, M.22; bound, M.24.50.

Abwehrfermente des tierischen Organismus gegen körper-, blutplasma-, und zellfremde Stoffe, ihr Nachweis und ihre diagnostische Bedeutung zur Prüfung der Funktion der einzelnen Organe. Von Emil Abderhalden, Direktor des Physiologischen Institutes der Universität zu Halle a.S. Zweite vermehrte Auflage. Price, paper, M.5.60; bound, M.6.40.

SOZIOLOGISCHER VERLAG, Berlin-Charlottenburg, 5. (Im Buchhandel bei Wilh. Opetz, Leipzig.)

Norddeutsche Schriftensammlung. Herausgegeben von M. Ernst. 3. Recht und Irrsinn. Studie von Dr. von Kautzsch. Price not stated.

STECHERT, G. E., AND COMPANY, New York, London, Leipzig, Paris.

Stammering and Cognate Defects of Speech. By C. S. Bluemel. Vol. I. The Psychology of Stammering. Vol. II. Contemporaneous Systems of Treating Stammering; their Possibilities and Limitations. Price 8s net, or 20s. net.

THACKER, SPINK, AND CO., Calcutta.

Labour Room Clinics, being Aids to Midwifery Practice. By Captain V. B. Green-Armytage, M.D., I.M.S. Price 2s. 6d. net.

THE MINING JOURNAL OFFICE, London.

Radium, its Production and Uses. By Sydney Fawns, F.G.S. Price not stated.

TIPOGRAFIA NAZIONALE DI G. BERTERO E. C., Via Umbria, Rome.

Ministero di Agricoltura, Industria e Commercio. Dott. Alfonso Giordano, Docente d'Igiene Mineraria nella Regia Università di Palermo. La Fisiopatologia e l'Igiene dei Minatori. Price not stated.

TREVES FRATELLI, Editori, Milano.

Giuseppe Sanarelli, Professore d'Igiene nella R. Università di Bologna. Tuberculosi ed Evoluzione Sociale. Price not stated.

UNIVERSITY CORRESPONDENCE COLLEGE, Burlington House, Cambridge.

The Calendar. 1912-1913. Price 1s. net.

UNIVERSITY OF LONDON PRESS, London. Published for the University of London Press, Limited, by HODDER AND STOUGHTON AND HENRY FROWDE.

The Proceedings of the Optical Convention, 1912. Held at South Kensington, June 19th to June 26th, 1912. Volume II. London, 1912. Price 10s. net.

The Principles and Practice of Medical Hydrology, being the Science of Treatment by Waters and Baths. By R. Fortescue Fox, M.D. Lond., F.R. Met. Soc. Price 6s. net.

UNIVERSITY PRESS, Cambridge. CAMBRIDGE UNIVERSITY PRESS, Fetter-lane, London.

The State Provision of Sanatoriums. By S. V. Pearson, M.D. Cantab., M.R.C.P. Lond. Price 3s. net.

A Manual of School Hygiene. By Edward Hope, M.D., D.Sc., Edgar A. Browne, F.R.C.S.E., and C. S. Sherrington, M.D., F.R.S. New and revised edition. Price 4s. 6d.

VOGEL, F. C. W., Leipzig.

Handbuch der Frauenkrankheiten. Von M. Hofmeier, Würzburg. Zugleich als 15. Auflage des Handbuches der Krankheiten der weiblichen Geschlechtsorgane. Von Karl Schroeder. Price, paper, M.14; bound, M.16.

Deutsche Zeitschrift für Nervenheilkunde, 47 und 48 Band. Festschrift Herrn Geheimrat Professor Dr. A. von Strümpell zur Feier seines sechzigsten Geburtstages gewidmet von seinen Freunden und Schülern. Price not stated.

WILEY, JOHN, AND SONS, New York. CHAPMAN AND HALL, Limited, London.

Resuscitation from Electric Shock, Traumatic Shock, Drowning, Asphyxiation from any Cause, by Means of Artificial Respiration by the Prone Pressure (Schaefer) Method. By Charles A. Lauffer, A.M., M.D., Medical Director, Westinghouse Electric and Manufacturing Co., East Pittsburgh, Pa. First edition. Third thousand. Price 2s. net.

WOMEN'S INDUSTRIAL COUNCIL, 7, John-street, Adelphi, London, W.C.

How to Take Care of Baby. By Selina F. Fox, M.D., B.S., Senior Physician of the Bermondsey Medical Mission. With Preface by Eric Pritchard, M.A., M.D., M.R.C.P. Price 1d.; or 1½d. post free.

How to Take Care of the Sick at Home. By W. and S. Rintoul. With Preface by Sir Victor Horsley, F.R.S., B.S., F.R.C.S., M.D. Price 1d.; or 1½d. post free.

YALE UNIVERSITY PRESS, New Haven. FROWDE, HENRY (OXFORD UNIVERSITY PRESS), London.

Irritability: a Physiological Analysis of the General Effect of Stimuli in Living Substrance. By Max Verworn, M.D., Ph.D. Professor at Bonn Physiological Institute. Price 15s. net.

YEAR BOOK PRESS, London.

The Girls' School Year Book. Price 3s. 6d. net.

# Appointments.

*Successful applicants for vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.*

BELL, JAMES ADAMSON, L.R.C.P. Lond., M.R.C.S., has been appointed Medical Officer to H.M. Prison, Gloucester.

CALDWELL, J. S., M.B., B.S. Edin., has been appointed Certifying Surgeon under the Factory and Workshop Acts for the Beith District of the county of Ayr.

CLARK, LIZZIE M. S., M.B., Ch.B. Edin., has been appointed Assistant Medical Officer at the South Shields Workhouse.

HOOD, THOMAS, M.R.C.S., L.R.C.P. Lond., has been appointed Principal Medical Officer in Southern Nigeria.

MANNING, FITZMAURICE, L.K.Q.C.P. Irel., has been appointed Principal Medical Officer in Northern Nigeria.

ROBINSON, HARGREAVES, L.A.H. Dub., L.M.R.C.P. Irel., has been appointed Clinical Assistant to St. Paul's Hospital for Skin and Genito-urinary Diseases.

SMITH, JOHN, M.D. Edin., M.R.C.S., L.R.C.P. Lond., has been appointed Medical Referee under the Workmen's Compensation Act, 1906, for the Sheriffdom of Fife and Kinross (Kirkcaldy District).

STEWART, J., has been appointed Certifying Surgeon under the Factory and Workshop Acts for the Dufftown District of the county of Banff.

# Vacancies.

*For further information regarding each vacancy reference should be made to the advertisement (see Index).*

ABERGAVENNY, MONMOUTHSHIRE ASYLUM.—Junior Assistant Medical Officer. Salary £225 per annum, with board, apartments, washing, and attendance.

BANBURY, HORTON INFIRMARY.—House Surgeon. Salary £100 per annum, with board and residence.

BARNSTAPLE, NORTH DEVON INFIRMARY.—House Surgeon. Salary £150 per annum, with board, residence, and washing.

BEDFORD COUNTY HOSPITAL.—Assistant House Surgeon. Salary £80 per annum, with board, lodging, and laundry.

BELFAST, QUEEN'S UNIVERSITY.—Demonstrator in Physiology. Salary £120 per annum.

BERKSHIRE EDUCATION COMMITTEE.—Assistant Medical Inspector of Schools. Salary £300 per annum.

BIRKENHEAD UNION INFIRMARY AND WORKHOUSE.—Senior Resident Assistant Medical Officer. Salary £150 per annum, with board, apartments, &c.

BIRMINGHAM AND MIDLAND EYE HOSPITAL.—Third House Surgeon. Salary £80 per annum, with residence and board.

BRADFORD CHILDREN'S HOSPITAL.—House Surgeon. Salary £100 per annum.

BRENTFORD UNION INFIRMARY.—Medical Superintendent and Medical Officer for the Workhouse and Schools. Salary £400 per annum, with rations, attendance, apartments, washing, fees, &c.

BRIDGWATER HOSPITAL.—House Surgeon. Salary at rate of £125 per annum, with board, lodging, and washing.

BRIGHTON, ROYAL ALEXANDRA HOSPITAL FOR SICK CHILDREN, Dyke-road.—House Surgeon for six months. Salary at rate of £80 per annum, with board, lodging, and washing.

BRISTOL ROYAL HOSPITAL FOR SICK CHILDREN AND WOMEN.—House Surgeon. Salary £80 per annum, with board, rooms, and attendance.

BRISTOL ROYAL INFIRMARY.—House Physician. Salary at rate of £100 per annum, with apartments, board, and laundry.

BURY INFIRMARY.—Senior House Surgeon. Salary £110 per annum, with board, residence, and washing.

CAMBRIDGE, ADDENBROOKE'S HOSPITAL.—House Surgeon for six months. Salary at rate of £100 per annum, with board, residence, and laundry.

CANCER HOSPITAL, Fulham-road, S.W.—House Surgeon for six months. Salary £70 per annum.

CANTERBURY MENTAL HOSPITAL, Canterbury.—Assistant Medical Officer, unmarried. Salary £160 per annum, with board, lodging, washing, and attendance. Also Locum Tenent Assistant Medical Officer. Salary £5 5s. a week, with board, lodging, washing, and attendance.

CARDIFF, KING EDWARD VII.'s HOSPITAL.—House Surgeon for six months. Salary at rate of £60 per annum, with board, residence, and laundry.

CARLISLE, CUMBERLAND INFIRMARY.—Resident Medical Officer. Salary at rate of £80 per annum, with board, lodging, and washing.

CARLISLE NON-PROVIDENT DISPENSARY.—Resident Medical Officer. Salary £200 per annum, with apartments.

CENTRAL CHINA AND SOUTH INDIA.—Female Medical Missionaries and Doctors.

CHESTER GENERAL INFIRMARY.—House Physician. Salary £90 per annum, with residence and maintenance.

CHESTERFIELD AND NORTH DERBYSHIRE HOSPITAL.—House Physician. Salary £90 per annum, with board, apartments, and laundry.

COLCHESTER, ESSEX COUNTY HOSPITAL.—House Physician. Salary £80 per annum, with board, residence, and washing.

CORNWALL COUNTY SANATORIUM.—Medical Superintendent. Salary £300 per annum, with house.

COVENTRY AND WARWICKSHIRE HOSPITAL, Coventry.—Senior House Surgeon, House Physician, and Junior House Surgeon. Salary of former £150 per annum, and of two latter £110 and £100 per annum respectively, with residence, board, laundry, and attendance.

DEVONPORT, ROYAL ALBERT HOSPITAL.—Assistant House Surgeon, unmarried. Salary at rate of £75 per annum, with board and laundry.

DURHAM COUNTY SANATORIUM.—Medical Superintendent. Salary £400 per annum, with quarters and board.

EVELINA HOSPITAL FOR SICK CHILDREN, Southwark, London, S.E.—House Surgeon for six months. Salary at rate of £75 per annum, with board, residence, and washing.

GATESHEAD DISPENSARY.—Assistant Medical Officer. Salary £200 per annum.

GLASGOW MATERNITY AND WOMEN'S HOSPITAL, OBSTETRICAL DEPARTMENT.—Two Indoor and Three Outdoor House Surgeons.

GRIMSBY AND DISTRICT HOSPITAL.—Senior House Surgeon. Salary £100 per annum. Also Junior House Surgeon. Salary £80 per annum, with board, lodging, attendance, and washing.

HALIFAX ROYAL INFIRMARY.—Senior House Surgeon. Also Third House Surgeon, both unmarried. Salaries at rate of £120 and £80 per annum respectively, with residence, board, and washing.

HASTINGS, EAST SUSSEX HOSPITAL.—Assistant House Surgeon. Salary at rate of £70 per annum, with residence, board, and washing.

HOLBORN UNION INFIRMARY, Upper Holloway, N.—Second Assistant Medical Officer. Salary £100 per annum, with board, apartments, and washing.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, London, W.C.—House Surgeon, unmarried, for six months. Salary £30, with board and residence.

HULL ROYAL INFIRMARY.—Casualty House Surgeon. Salary at rate of £60 per annum for six months' appointment or £80 per annum for twelve months, with board and lodging.

LEAMINGTON SPA, WARNEFORD GENERAL HOSPITAL.—House Physician. Salary £85 per annum, with board, residence, and laundry.

LEEDS PUBLIC DISPENSARY.—Junior Resident Medical Officer. Salary £100 per annum, with board residence, and laundry.

LEWES VICTORIA HOSPITAL.—Resident Medical Officer. Salary £120 per annum, with apartments, board, washing, and attendance.

LINCOLN COUNTY HOSPITAL.—Junior House Surgeon, unmarried, for six months. Salary at rate of £100 per annum, with board, residence, and washing.

LIVERPOOL ROYAL INFIRMARY.—Two House Physicians, One House Surgeon, and One Gynæcological House Surgeon for six months.

LIVERPOOL, ROYAL SOUTHERN HOSPITAL.—Two House Physicians and Three House Surgeons for six months. Salary at rate of £60 per annum, with board and residence.

LIVERPOOL STANLEY HOSPITAL.—Junior House Surgeon. Salary £75 per annum, with board, residence, and laundry.

LONDON FEVER HOSPITAL, Liverpool-road, N.—Assistant Resident Medical Officer. Salary £150 per annum, with residence and board.

MAIDSTONE, KENT COUNTY ASYLUM.—Fourth Assistant Medical Officer, unmarried. Salary £200 per annum, with quarters, attendance, washing, &c.

MANCHESTER AND SALFORD HOSPITAL FOR SKIN DISEASES.—House Surgeon. Salary £75 per annum, with board and residence.

MANCHESTER CHILDREN'S HOSPITAL, Pendlebury.—Resident Officer, unmarried, for six months. Salary at rate of £100 per annum.

MANCHESTER EDUCATION COMMITTEE.—Assistant School Medical Officer. Salary £250 per annum.

MARGATE, ROYAL SEA BATHING HOSPITAL FOR SURGICAL TUBERCULOSIS.—Resident Surgeon. Salary at rate of £120 per annum, with board, residence, and laundry.

MIDDLESBROUGH, NORTH RIDING INFIRMARY.—Senior House Surgeon and Junior House Surgeon for six months. Salary of former at rate of £100 per annum, and of latter at rate of £80 per annum, with board, apartments, and laundry.

NEWPORT (MON.), ROYAL GWENT HOSPITAL.—Resident Medical Officer. Salary at rate of £100 per annum, with board, residence, and laundry.

NORTHAMPTON COUNTY ASYLUM, Berrywood, Northampton.—Junior Assistant Medical Officer. Salary £200, with board, lodging, and washing.

NOTTS COUNTY COUNCIL.—Tuberculosis Officer. Salary £400 per annum.

OXFORD COUNTY ASYLUM, Littlemore, near Oxford.—Assistant Medical Officer. Salary £150 per annum, with apartments, board, and washing.

PARK HOSPITAL FOR CHILDREN, Hither Green, London, S.E.—Assistant Medical Officers. Salary £150 per annum, with board, lodging, and washing. Also Temporary Resident Assistant Medical Officer.

PLYMOUTH, SOUTH DEVON AND EAST CORNWALL HOSPITAL.—House Physician for six months. Salary £75 per annum, with board, residence, and washing.

PRESCOT UNION WORKHOUSE.—Medical Officer and Public Vaccinator. Salary £400 per annum.

PRESTON, COUNTY ASYLUM, Whittingham, Lancs.—Assistant Medical Officer, unmarried. Salary £200 per annum, with board, apartments, and washing.

QUEEN CHARLOTTE'S LYING-IN HOSPITAL, Marylebone-road, N.W.—Assistant Resident Medical Officer for four months. Salary at rate of £50 per annum, with board, residence, and washing.

RAINHILL, NEAR LIVERPOOL, COUNTY ASYLUM.—Assistant Medical Officer, unmarried. Salary £200 per annum, with apartments, board, attendance, and washing.

READING, ROYAL BERKSHIRE HOSPITAL.—Second House Surgeon. Salary at rate of £80 per annum, with lodging, board, and washing.

ROYAL NAVAL MEDICAL SERVICE.—Twenty-five appointments.

ST. GILES, CAMBERWELL, INFIRMARY, Brunswick-square.—Third Assistant Medical Officer. Salary £150 per annum, with apartments, board, and washing. Also Medical Officer for the Christchurch District. Salary £120 per annum, with fees.

ST. MARY'S HOSPITAL FOR WOMEN AND CHILDREN, Plaistow, E.—Senior Resident Medical Officer, unmarried, for six months. Salary at rate of £100 per annum, with residence, board, and laundry.

SALISBURY GENERAL INFIRMARY.—Assistant House Surgeon, unmarried. Salary £50 per annum, with apartments, board, and lodging.

SHEFFIELD ROYAL HOSPITAL.—Assistant House Physician, unmarried. Salary £80 per annum, with board, lodging, and washing.

SHEFFIELD ROYAL INFIRMARY.—House Surgeon, Ophthalmic House Surgeon, and Ear and Throat House Surgeon for six months. Salaries £80, £70, and £70 per annum respectively, with board, residence, &c.

SHEFFIELD UNIVERSITY, DEPARTMENT OF PATHOLOGY.—Junior Demonstrator in Pathology. Salary £150 per annum.

SIDLAW SANATORIUM.—Resident Medical Officer. Salary £125.

SOUTHAMPTON, ROYAL SOUTH HANTS AND SOUTHAMPTON HOSPITAL.—House Surgeon for six months. Salary at rate of £100 per annum, with rooms, board, and washing.

SOUTH SHIELDS, INGHAM INFIRMARY AND SOUTH SHIELDS AND WESTOE DISPENSARY.—Junior House Surgeon. Salary £115 per annum, with residence, board, and washing.

STOKE-ON-TRENT, NORTH STAFFORDSHIRE INFIRMARY, Hartshill.—Two House Surgeons. Salary £110 per annum, with apartments, board, and washing.

SUNDERLAND ROYAL INFIRMARY.—House Physician. Salary £120 per annum, with board, residence, and laundry.

SUNDERLAND ROYAL INFIRMARY CHILDREN'S HOSPITAL.—Resident Medical Officer for six months. Salary £80 per annum, with board, residence, and laundry.

SWANSEA GENERAL AND EYE HOSPITAL.—House Surgeon. Salary £100 per annum, with board, washing, and attendance.

WEST HAM AND EASTERN GENERAL HOSPITAL, Stratford, E.—Senior House Surgeon and Junior House Physician. Salaries at rate of £100 and £75 per annum respectively.

WEST LONDON HOSPITAL, Hammersmith-road, W.—Two House Physicians and Three House Surgeons for six months. Board, lodging, and laundry allowance.

WESTMINSTER GENERAL DISPENSARY.—Resident Medical Officer. Salary £120 per annum, with rooms, gas, coals, and attendance.

WINDSOR, KING EDWARD VII. HOSPITAL.—Second House Surgeon. Salary £75 per annum, with residence, board, laundry, and attendance.

WOLVERHAMPTON AND STAFFORDSHIRE GENERAL HOSPITAL.—Two House Surgeons. Salary £125 per annum, with board, rooms, and laundry.

WORCESTER GENERAL INFIRMARY.—Resident Medical Officer. Salary £150 per annum, with board, residence, and washing.

YORK DISPENSARY AND MATERNITY HOSPITAL.—Resident Medical Officer, unmarried. Salary £140 per annum, with board, lodging, and attendance.

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THE Chief Inspector of Factories, Home Office, London, S.W., gives notice of a vacancy for a Certifying Surgeon under the Factory and Workshop Acts at North Belfast, in the county of Antrim.

# Births, Marriages, and Deaths.

## BIRTHS.

ALMOND.—On August 14th, at 6, Brock-street, Bath, the wife of G. Hely-Hutchinson Almond, M.A., B.M., B.Ch. Oxon., M.R.C.S. Eng., L.R.C.P. Lond., of a son.

GLADSTONE.—On August 12th, at Rosedale, Sydenham-road, S.E., to Dr. and Mrs. Gladstone, a daughter.

INGRAM.—On August 12th, at Welford, near Rugby, the wife of Thomas Lewis Ingram, M.R.C.S., L.R.C.P., of a son.

## MARRIAGES.

KING—DICKINS.—On August 12th, at the Parish Church, Chipping Barnet, Surgeon W. H. King, R.N., to Elsie Mary, daughter of Mrs. Dickins and the late H. C. Dickins, of Barnet.

## DEATHS.

FLEMING.—On August 2nd, at Brighton, after a few days' illness, Dr. Christopher Fleming, of Worksop, aged 65. R.I.P.

MILLER.—On August 15th, at Elstead, Arden-road, Finchley, Frederick Montague Miller, M.R.C.S., L.R.C.P., late of Northolme, Upper Clapton, aged 65 years.

NOKE.—On August 12th, at Northampton, Frank Herbert Noke, M.B., D.P.H., late Captain, R.A.M.C., younger and only surviving son of the late Edward Noke, of 13, Springfield-place, Bath, aged 35.

*N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.*

# Notes, Short Comments, and Answers to Correspondents.

## STUDENTS' NUMBER OF THE LANCET.

INFORMATION intended for the Students' Number of THE LANCET must be sent WITHOUT DELAY, addressed to the Sub-Editor, and marked on the envelope "Students' Number Only."

## YELLOW FEVER AND SMALL-POX IN BRAZIL.

IN the town of Recife, or, as it is better known, Pernambuco, the early months of 1912 were (according to the British Consul's report) very unhealthy. Cases of yellow fever were frequent, probably owing to the unusually early and heavy rains, which were quite abnormal, 120 inches of rain falling between Jan. 1st and August 31st. Small-pox was also very prevalent. Under the initiative of the State Government a sanitary corps was organised, and a general cleaning up of the town followed. Among the chief difficulties to be contended with is the swampy nature of the ground on which the town is built, the stagnant water after rains, and the apathy and ignorance of the large coloured population. According to the Health Department reports, the mortality fell from 10,234 in 1911 to 7573 in 1912. Deaths from small-pox, which reached the alarming figures of 2440 in 1911, fell to 745 in 1912. The death-rate for 1912 worked out at 37 per 1000 inhabitants, as against 51 per 1000 in 1911. Forty-one persons died from yellow fever, a considerable increase on recent years; many Brazilians were attacked as well as foreigners, but fortunately the disease appeared to be of a less virulent type than usual.

## A CASE OF LIGHTNING STROKE.

*To the Editor of* THE LANCET.

SIR,—I am not competent to discuss the medical aspect of the remarkable recovery after lightning injury recorded by Dr. W. Gem in THE LANCET of August 2nd, but I may say that this accident may have occurred in one of two ways—(1) the man may have been struck on the back of the head by a flash of lightning which passed down as suggested in the report; or (2) lightning may have struck the large ironstone near him, and, if he had a metal object on his head, the injuries be caused by a current or discharge due to the difference of electrical potential between the ground on which he was standing and the metal above him, or what is commonly called a surging effect.

Apart from effects on the constituents of a living body, about which I will express no opinion, damage by lightning is caused by the expansive force of steam or air. A large amount of liquid conducts well, but a small quantity offers sufficient resistance to allow of the generation of heat. For instance, the moisture contained in brick- or stonework is suddenly converted into steam; the sap in a tree is similarly vapourised; and as the conversion is in a minute fraction of a second it forms a most powerful explosive. Electricity passed between the man's foot and the ironstone, and the (more or less) damp earth was blown up. Is it not possible that the breaking of the bones of the foot was due to this explosion and not to the direct effect of the current? The expansion of the air due to the heating effect of the current passing through it would explain the great rush of wind he felt. So far the effects are consistent with (1), but they could just as well have occurred under (2).

A very large number of the cases reported of persons being struck by lightning and not killed are really only instances of shock due to these surging effects. Just as when one building is struck by lightning fires may be caused in other buildings as much as half a mile away, so may a man receive a shock when lightning strikes a tree or other object, or even the ground, in his vicinity, provided he has some metal about him.

The injuries in the case recorded by Dr. Gem, if due to the surging effect and not to direct stroke, were more severe than I have ever heard of before, but the flash may have been exceptional in severity or have struck the ground very near him. It would be of interest to know what metal (if any) the man had about him at the time.

I am, Sir, yours faithfully,

London, E.C., August 2nd, 1913. ALFRED HANDS.

## SNAKE-BITE CURES.

"A Catholic Missionary," writing in the *Rangoon Times*, records a number of cures from poisonous snake-bites by certain indigenous drugs. The chief is a ten-grain pill of vichamaroundee, a medicine prepared in Pondicherry according to an Indian recipe. Another cure is a preparation of the following ingredients in equal parts—viz., ammonium zedoria, ophioxylon serpentinum, arsenicum album, arsenicum flabum, arsenicum rubrum, aristolochia bracteata, gardenia dumetorum; pound all these drugs with sufficient betel leaves' juice to make it into a thick paste, and give one a half grains of it to the patient every five or eight minutes.

THE West-End Depôt of Messrs. Burroughs Wellcome and Co. has been transferred from Messrs. Munro and Co., Regent-street, to Messrs. John Bell and Croyden, Limited, 50, Wigmore-street, London, W. This depôt will maintain a continuous day and night service.

COMMUNICATIONS not noticed in our present issue will receive attention in our next.

# Medical Diary for the ensuing Week.

## LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

**POST-GRADUATE COLLEGE**, West London Hospital, Hammersmith-road, W.

MONDAY.—10 A.M., Dr. Simson: Diseases of Women. 10.30 A.M., Medical Registrar: Demonstration of Cases in Wards. 12 noon, Dr. Bernstein: Pathological Demonstration. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Armour: Operations. Mr. Dunn: Diseases of the Eye. 5 P.M., Lecture:—Mr. Addison: Congenital Deformities.

TUESDAY.—10 A.M., Dr. Robinson: Gynæcological Operations. 10.30 A.M., Surgical Registrar: Demonstration of Cases in Wards. 12 noon, Mr. T. Gray: Demonstration of Fractures. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Addison: Operations. Dr. Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin. 5 P.M., Lecture:—Dr. Addison: Congenital Deformities.

WEDNESDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Davis: Operations of the Throat, Nose, and Ear. 12 noon, Mr. Souttar: Abdominal Diagnosis. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Souttar: Operations. Mr. B. Harman: Diseases of the Eye. Dr. Simson: Diseases of Women. 5 P.M., Lecture:—Mr. T. Gray: Atatic Deformities.

THURSDAY.—10.30 A.M., Dr. Simson: Gynæcological Demonstration. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Armour: Operations. Mr. Dunn: Diseases of the Eye. 5 P.M., Lecture:—Mr. T. Gray: Static Deformities.

FRIDAY.—10 A.M., Dr. Robinson: Gynæcological Operations. 12.15 P.M., Lecture:—Dr. Bernstein: Clinical Pathology. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Addison: Operations. Dr. Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin. 5 P.M., Lecture:—Mr. Souttar: Paralytic Deformities.

SATURDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Davis: Operations of the Throat, Nose, and Ear. Mr. B. Harman: Diseases of the Eye. 2 P.M., Medical and Surgical Clinics. Mr. Souttar: Operations.

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Demonstrations in Clinical Medicine:—

MONDAY.—2.15 P.M., Dr. Wall: Pulmonary Tuberculosis.

TUESDAY.—2.15 P.M., Dr. Grünbaum: Diseases of the Blood.

WEDNESDAY.—2.15 P.M., Dr. Hutchison: Diagnosis of Abdominal Disease.—Dr. Thompson: Diseases of the Ductless Glands.

THURSDAY.—2.15 P.M., Dr. Head: Mental Symptoms occurring in the Practice of General Medicine.

FRIDAY.—2.15 P.M., Dr. L. Smith: Common Cardiac Conditions.

**THE THROAT HOSPITAL**, Golden-square, W.

MONDAY.—5.15 P.M., Special Demonstration of Selected Cases.

THURSDAY.—5.15 P.M., Clinical Lecture.

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TUESDAY.—10 A.M., Major Operations. 4 P.M., Class in Gynæcological Diagnosis.

WEDNESDAY.—10 A.M., Obstetrical Lecture: Version (continued). 11 A.M., Examination of Patients and Minor Operations.

THURSDAY.—10 A.M., Major Operations.

FRIDAY.—10 A.M., Gynæcological Lecture: Uterine Tumours. 11 A.M., Examination of Patients and Minor Operations. 4 P.M., Class in Gynæcological Diagnosis.

*For further particulars of the above Lectures, &c., see Advertisement Pages.*

## A DIARY OF CONGRESSES.

THE following Congresses, Conferences, and Exhibitions are announced for 1913:—

April 26th–Nov. 5th (Ghent).—International Exhibition.

May 31st to October (London, Earl's Court).—Imperial Services Exhibition.

May–October (Leipzig).—First International Building Exhibition.

June–October (London, Crystal Palace).—Anglo-German Exhibition.

June 24th (opened) (London, 54a, Wigmore-street).—Historical Medical Museum. (Organised by Mr. Henry S. Wellcome.)

Aug. 20th–26th (Ghent).—Third International Congress of Neurology and Psychiatry.
,, 25th–30th (Buffalo).—Fourth International Congress of School Hygiene.
,, 31st–Sept. 7th (Antwerp).—Fourth International Congress for the Hygiene and Salubrity of Dwellings.
Sept. 2nd–6th (Groningen).—International Physiological Congress.
,, 9th–13th (Vienna).—Second International Congress of Life Saving and Prevention of Accidents.
,, 10th–17th (Birmingham).—British Association.
,, 21st–26th (Vienna).—Eighty-fifth Meeting of German Natural Philosophers and Physicians.
,, 22nd–28th (Milan).—Fourteenth International Anti-alcoholic Congress.
Oct. 28th–Nov. 1st (London, Royal Horticultural Hall).—Twenty-fourth Universal Cookery and Food Exhibition.
(London, Shepherd's Bush).—National Gas Exhibition.
(Chicago).—Congress of the International Association of Refrigeration.
(Washington).—Congress of American Physicians and Surgeons.

In 1914:—
April 14th–18th (New York).—Fourth Congress of the International Surgical Society.
May 1st–Nov. 1st (Lyons).—International Town Life Exhibition.
Aug. 10th–15th (St. Petersburg).—Twelfth International Congress of Ophthalmology.
Sept. 7th–12th (Berne).—International Congress for Neurology, Psychiatry, and Psychology.
(London).—Anglo-American Exhibition.
(Aberdeen).—Eighty-second Annual Meeting of the British Medical Association.
(Vienna).—Third International Congress for Professional Diseases.
(Auckland, N.Z.).—Australasian Medical Congress.
(St. Petersburg).—Third Mendeléeff Congress of Pure and Applied Chemistry and Physics.
(Washington, D.C.).—International Congress of Americanists.
(Paris).—Fourth International Medical Congress on Industrial Accidents.

**The following journals, magazines, &c., have been received:**—Journal of Pathology and Bacteriology, Journal of Tropical Medicine and Hygiene, Canadian Practitioner and Review, Journal of Physiology, Quarterly Journal of Experimental Physiology, American Medicine, South African Medical Record, Archiv für Experimentelle Pathology und Pharmakologie, Journal of Surgery, Albany Medical Annals, Annals of Tropical Medicine, Revue de Chirurgie, Revue de Médecine, Birmingham Medical Review, British Journal of Dermatology, Journal of Obstetrics, &c.

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## MANAGER'S NOTICES.

### THE INDEX TO THE LANCET.

THE Index and Title-page to Vol. I. of 1913, which was completed with the issue of June 28th, were given in THE LANCET of July 5th.

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*(Taken daily at 8.30 a.m. by Steward's Instruments.)*

THE LANCET Office, Aug. 20th, 1913.

| Date. | Barometer reduced to Sea Level and 32° F. | Direction of Wind. | Rainfall. | Solar Radio in Vacuo. | Maximum Temp. Shade. | Min. Temp. | Wet Bulb. | Dry Bulb. | Remarks. |
|---|---|---|---|---|---|---|---|---|---|
| Aug. 14 | 30·07 | N.W. | 0·01 | 111 | 70 | 59 | 57 | 62 | Fine |
| ,, 15 | 30·11 | S.E. | 0·07 | 81 | 67 | 59 | 59 | 60 | Overcast |
| ,, 16 | 30·12 | N.W. | ... | 110 | 73 | 59 | 59 | 62 | Overcast |
| ,, 17 | 30·24 | E. | ... | 115 | 75 | 57 | 58 | 64 | Fine |
| ,, 18 | 30·22 | N.E. | ... | 107 | 66 | 57 | 56 | 59 | Overcast |
| ,, 19 | 30·16 | N.E. | ... | 79 | 62 | 55 | 54 | 57 | Overcast |
| ,, 20 | 30·14 | N.E. | ... | 90 | 63 | 56 | 54 | 58 | Cloudy |

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